INTN'L MONTHLY MAGAZINE-BY AND FOR ACTIVE RADIOAMATEURS

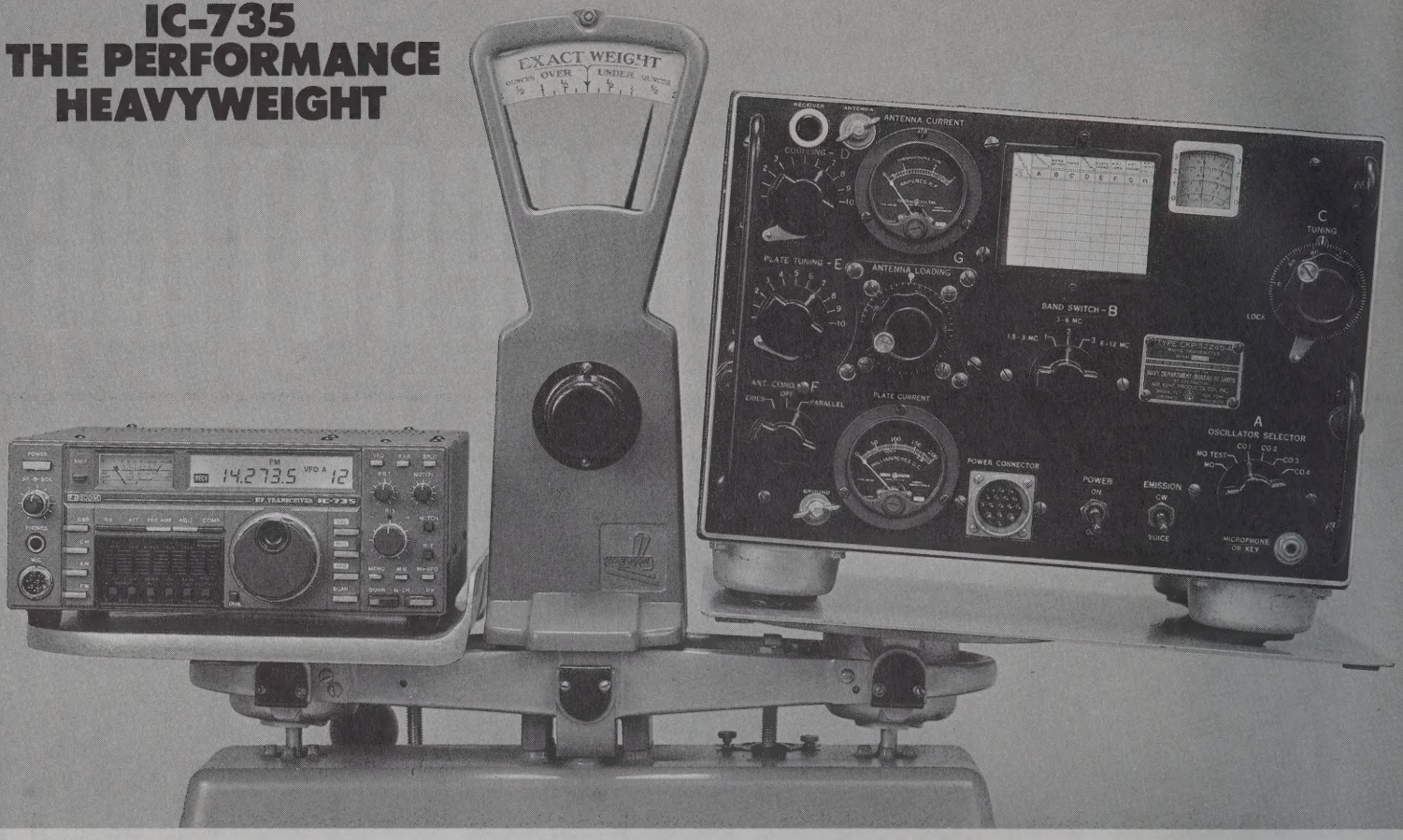
RADIOSPORTING

(OCT/NOV) DECEMBER 1986 No. 22 8612 $2.00

FRANK ANZALONE, W1WY

BUZ REEVES, K2GL

IC-735
THE PERFORMANCE HEAVYWEIGHT



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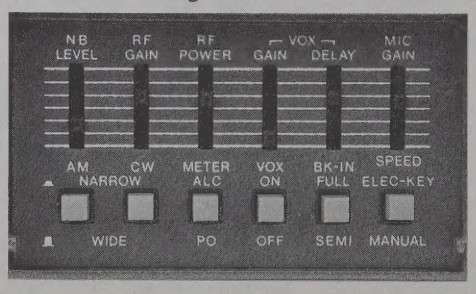

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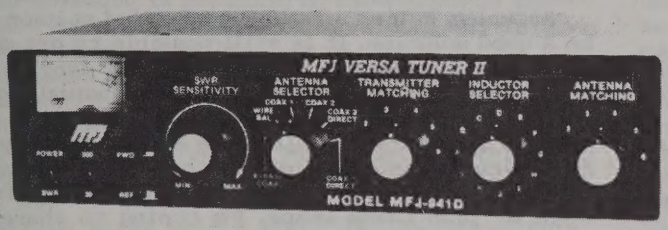

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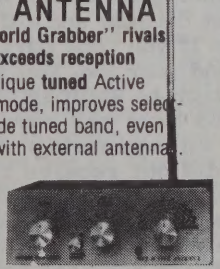

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Turn your synthesized scanning 2 meter handheld into a hot Police/Fire/Weather band scanner! **$39.95** MFJ-313
144-148 MHz handhelds receive Police/Fire on 154-158 MHz with direct frequency readout. Hear NOAA maritime coastal plus more on 160-164 MHz. Converter mounts between handheld and rubber ducky. Feedthru allows simultaneous scanning of both 2 meters and Police/Fire bands. No missed calls. Crystal controlled. Bypass/Off switch allows transmitting (up to 5 watts). Use AAA battery. 2¼x1½x1½ in. BNC connectors.

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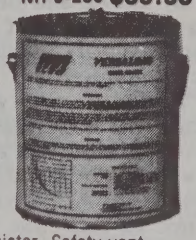

Tune up fast, extend life of finals, reduce QRM! Rated 1KW CW or 2KW PEP for 10 minutes. Half rating for 20 minutes, continuous at 200 W CW, 400 W PEP. VSWR under 1.2 to 30 MHz, 1.5 to 300 MHz. Oil contains no PCB. 50 ohm non-inductive resistor. Safety vent. Carrying handle. 7½x6¾ in.

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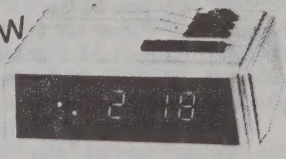

Switch to 24 hour UTC or 12 hour format! Battery backup maintains time during power outage. ID timer alerts every 9 minutes after reset. Red LED .6 inch digits. Synchronizable with WWV. Alarm with snooze function. Minute set, hour set switches. Time set switch prevents mis-setting. Power out, alarm on indicators. Gray and black cabinet. 5x2x3 inches. 110 VAC, 60 Hz.

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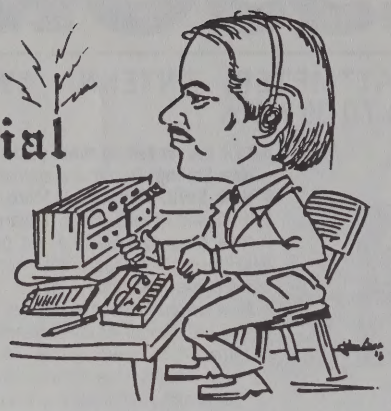

After a two month pause, we are back. Even though I hoped that it would take only one month, to move both the family and the business was a bit more than I estimated. Not to mention the disassembly of my tower and problems with it. At this point, we are still only half unpacked, but most of our office equipment is operational so we are ready to roll with our magazine.

Thank you for your patience and understanding. Those who have moved recently, remember very well what is involved. Packing, moving, unpacking, making the new place livable and taking care of the immediate needs had to take priority over the radio. It got so bad that I didn't even have the 2 meter rig operating, never mind the HF station. What a difference from the time when, looking back to the days of bachelor OK3BU arriving in Canada: I got my VE3BMV license before I had a job, my first piece of furniture - was an FT DX 400 before I bought the kitchen table and I worked 5B DXCC in one year with a bunch of Inverted Vees 30 feet off the ground. I guess we must be getting older or maybe, more sane.

At this point, I am not even sure that I can put the tower up at our new location. It is a nice residential area, most likely not allowing those unsightly ham radio towers. But the location appears to be great for our children, close to good schools and other things that "normal" people need. Frankly, I had enough of contesting from the city. There is too much RF pollution from the houses around and one can not take advantage of a decent antenna system and operate without interference from all those wonderful electronic gadgets that the neighbors insist on turning on during the contest weekend. Over fourteen World High scores in the CQ WW and WPX contests, and just about all Canadian monoband records is not too bad for VE3BMV's sixteen years of contesting.

Now my plan is to find a place somewhere in the Pocono mountains, build a contest station with a new generation of antennas that should outperform anything I had on my tower in the past. A remote control will allow for the "regular" daily operation, while the contesting will be done from the actual site. This will allow me to do things on a different scale and it will be a welcome change from our past 46 x 120 foot size lot in the suburbs of Toronto.

The situation of the serious DXer or contester being "forced" to build his station outside of his residence is becoming a sad reality. The PRB-1 is not helping much. More and more hams are being dragged into courts and sued for their contribution to the community. Maybe the ARRL could spend members money on getting this mess sorted out rather than building the museum to our soon to be "forbidden" hobby? What a paradox: on the one hand we are trying to increase our numbers and the popularity of our hobby/sport, while on the other hand it is becoming more and more difficult to enjoy it from the places where we would like to live. We have to resort to going out into the boondocks to put up the towers and to enjoy interference free operating.

Actually, having a remote controlled station may be a good solution. It is still possible to get good radio land at low cost. Usually "useless" land for all other purposes, while its remoteness is actually good for the radio because it is so far away from man made RF pollution and all those RFI prone gadgets. It is nice to hear the stuff on the low bands and to be able to run the full power limit in the evenings. When my plan takes shape, I'm hoping to share my projects with you on the pages of RADIOSPORTING so that those of you in a similar situation, can benefit from it. Perhaps a number of serious hams can pull together to build a DX/contest station with remote control by each individual. Having the monoband installations, there should be little problem of scheduling the operating among the members. They could actually specialize on a particular band and build up the needed expertise for a contest operation in the multi operator category.

I was pleased to have the opportunity to take part in a special celebration - Buz Reeves', K2GL, eightieth birthday party. Most of the big multi-multi station operators were there and it was an exciting evening for all. IRSA - RADIOSPORTING presented Buz with a plaque and together with the CQ Magazine, elected K2GL to the Contest Hall of Fame as a first member. See more about it in this issue.

We are pleased to announce that we have the first winner of our DXCA award - Louis Cohen, K1YR, who managed to collect all the necessary contacts and QSL cards on 40 meters CW. Congratulations Lou and we are extending your subscription by one year!

The first running of our IRSA - WRC contest was quite a success. Propagation was good and many contesters reported that they had a great fun. The Frankford Radio Club was out for blood in the Club Competition category and might have succeed to prove that they really are the world's best contest club. There was an apparent lack of activity from Europe. What a shame, since the Europeans always complain about the unfair scoring system in other contests. The official notices were sent out to all the national organizations, but I guess good old bureaucracy takes its toll. Next time we will go after the individual members of IRSA from each country and rely on their fire and support to promote the contest. For the next year's running we should establish a firm spot on the contest calendar and will do our publicity well ahead of time. If you took part in our contest, don't forget to send your log. You just might win a one year subscription to RADIOSPORTING.

We had hoped to have the results of our 1985 World Contest Championship in this issue. Unfortunately we did not receive the results from CQ as promised. With the office and computers in transit, our issues of CQ were buried in the mail and there was no time to process the results. For the same reason we will not have the usual comments on CQ WW.

I was quite surprised and pleased to find out that my deficiency of using horizontal 80 meter delta loop turned out to be the CQ WW 80 m phone world record winner. Knowing that I was a loser in the DX pileups I concentrated on staying up all day and working the US stations. The antenna worked well for that purpose and helped me to work the highest number of

contacts on 80 m ever. In the first hour I worked 240 stations. It probably could have been better if I had a two element quad on my tower as I planned, but it feels even better to know that an ordinary delta loop from a city lot managed to corner the world record. So don't be intimidated by the big beams. Anything is possible. My big thanks to all of you who had mercy and gave me a contact, for it made the record possible.

I managed to operate 160 meter band category in the CQ WW Phone this year from Ontario. While the high bands were in super shape, contrary to a gloomy forecasts, the 160 really stank. It looks like I still managed to break the NA record. Amazing Rick, K5UR, had 55 countries after the first night! If everything works well, I would like to repeat this again in the CQ WW CW.

I had the pleasure to be at the North Jersey DX Association meeting. This fine club is loaded with Honor Rollers and a dedicated bunch of individuals. They are also handling all incoming QSL cards for the second district. The club recently installed a new repeater (147.180) which has an excellent coverage.

The Long Island DX Association invited me as a guest speaker to their meeting. I talked about the funny and serious stuff from my early radio days and then about the secrets of low band antennas and operating. The LIDXA is another fine club with a long tradition, the birth place of the popular LIDX Bulletin and home to many Honor Roll members. If you live in the vicinity of a good DX or contest club, look them up and join the bunch. It is a lot more fun to do your DXing and contesting if you are a part of a family. Meetings, bulletins and repeater contacts keep the fire going and multiply the fun in the process. Learning from the old tigers and guest speakers is a lot faster than doing it the hard way - isolated on your own.

Those who participated in the CAN-AM contests in the past and did not receive the certificates, please be patient. The CRRL was supposed to print the certificates, but nothing happened. We will rectify the situation as soon as possible.

In this issue we are reprinting my original article on Conductive Theory of Radio Wave Propagation which was published in June 1980 issue of CQ Magazine. This is in preparation to series of articles, in which I will elaborate more on this subject. Due to lack of time in the past, I did not have the chance to answer some letters I received in response to this article. It is almost amusing to see some experts saying that the idea of ducting or conducting is absurd, while others are saying it is nothing new. We would like to re-open and continue the discussion on the subject of propagation in the forthcoming issues. One thing that was left out from this article was my prediction that we were in for probably the second best sunspot cycle in the history. This really happened, on the contrary to the detailed predictions of N4XX and W3ASK in their propagation book, which was foretelling the one of the worst cycles. If you have had any unusual experience with propagation, please let us know.

We were blessed with good propagation conditions over the past few years. Quite a difference to what we were experiencing before, when the major storm landed on the contest weekend and we could just listen to the noise instead of signals. Even higher bands, like 20 meters are enjoying record breaking scores. Those who don't blindly listen to propagation forecasts are reaping the results and record scores. There is growing activity in the contests, more people are going out on the expeditions and the equipment is getting better. Multipliers are up and records are falling. Where will all this end? I think the "limits" are still far away. If we figure that a decent operator can work on SSB up to 8 stations a minute which would translate to about 23,000 contacts over 48 hour contest, there is still room for improvement. If only we had a steady supply of stations calling. (Want to go to Peter I Island, or the next Space Shuttle mission?)

Here in New Jersey, we have to get our QTH in order, because if it doesn't get done now, it will be a never ending project. At the same time we would like to get the magazine back on schedule. With more world class contributors joining us, we have a lot to look forward to. If you or your friends are still in the dark, please come forward and subscribe or send some articles, photos and news to us. It is your magazine, lets keep it fresh, fast and informative.

Going into our third year and growing fast, we are proud of our track record. Judging by the response from our readers and other publications, we have achieved our initial goals and maybe even set the standards for others.

A few years back, when I was talking to the editors of other magazines, they all toned down the importance of DXers and contesters with the argument that there are too few of us and that we are isolated individualists. This is perhaps true, but personally, feeling the void in the material available, I wanted to fill this gap with the RADIOSPORTING magazine. While the title might scare some casual DXer into making him think that he has to grab his transceiver and run, or use the Alpha amplifier for weightlifter's tool, this is not so. If you are chasing DX or anything that you can count, you are a radio-sportsman. DXCC, operating QRP, packet, VHF, collecting YL QSL cards, and such is a radio sport activity. Yes, Amateur Radio is also a sport. A very fine and technical sport. If you fit this category, then the RADIOSPORTING magazine is for you.

Being based in the United States, we hope to attract all those advertisers that thought that we were just some Canadian rag. About 85 percent of our subscribers are from the United States. So, here we are now in your backyard, ready to serve you even better than before. Please support those companies who are advertising in your favorite magazine and, when you have the opportunity, tell them how much you enjoy our magazine and their support.

The last issue from Canada was August/September. October and November issues were skipped. We are extending everybody's expiry date by 3 issues. Please check your mailing label. If we (or the computer) made a mistake, please let us know. If you are missing an issue, it may have gotten lost in the mail system. Let us know and we will send you another one.

If you are close to the expiry date, please renew now and help us keep the price of subscription low. Don't forget to mention RADIOSPORTING to your friends and encourage them to subscribe. For each new subscriber you sponsor, we will add one extra issue on your subscription.

Please note our new address and send all correspondence to:

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Box 282, Pine Brook, NJ 07058.
Our new telephone number is (201) 227-0712.

Thank you to all for the welcome and good wishes cards. They made us feel warm and are very much appreciated. 73 de Yuri & Sonya

DX news

C21NI, Nauru
was very active on CW on 7005 around 1100 - 1400Z, operator was JE3LWB.

HZ1AB, Saudi Arabia
is back on the air after a prolonged absence and change of QTH. Running Yaesu FT 902 and Butternut vertical at the present with SB-220 and tribander to be up very soon.

KH5, Palmyra
KB1HM/KP5 operated from Palmyra for just over an hour around 2300Z on Sept. 30 on 14226 kHz. He said he was with the Coast Guard working on some navigational equipment. The owners of Palmyra declined requests for DXpeditions since the disastrous K6LPL trip in early 1980, when their plane crashed, seriously injuring some of the DXpeditioners. Real life pirates were on the island at the same time.

KH8, American Samoa
Rudi, DK7PE/KH8 can be talked into 160 m QSOs. 1822 at 0700 - 0900Z. He will be moving on to 5W1 and T3Ø soon.

KP2, American Virgin Islands
multi - multi effort in CQ WW CW contest by N6DX/KP2 with fifteen operators.

ST2, Sudan
ON7IP/ST2 was to be active until the end of November favoring 14180 around 2200Z. QSL via Box 3215, Khartoum, Sudan, or via ON7IP.

SV/A, Mt. Athos
The resident monk who has been travelling 100 km each week to study for his amateur radio license didn't show up for the exam. Next chance is Spring.

W3AZD is still waiting for more papers before making a decision on DL7FT/SV/A operation earlier this year.

TA2G, Turkey
Operator Suha, has a license which permits him to operate on 20 m only. He can be found on 14257 at 1800 -1900Z.

UV1OO, Franz Josef Land
active on CW 7005 at 0930 - 1230Z.

Soviet Union
allowed their hams to operate on 30 meter band as of October 1, including RTTY mode.

On 80 meters Soviet hams are allowed to operate in 11 contests during the year in the segment between 3650 -3800 kHz.

VE2LJ, Zone 2
operated by VE2BTW, VE1BHA and VE2LJ during the CQ WW CW contest. QSL via VE3JDO.

VK9XI, Christmas Isl.
is Ron, ZL1AMO and very active on 7004 around 1000 - 1300Z.

VS6DO, Hong Kong
was worked on 160 m from the East Coast on Nov.13. AA1PE worked him on Nov. 17 at about 1200Z.

XU1SS, Kampuchea
is weak but workable on 14032 around 1330Z and 14180 at 1200Z on Sundays with DU9RG. QSL via JA1HQC.

XX9XX, Macao
Akito Nagi, JA5DQH will operate during the CQ WW CW on all bands and pay a special attention to grey line propagation. He will also operate as NN7S/VS6 after the contest.

ZA, Albania
has established diplomatic relations with Spain, which joins SV, TA, F and I as the only western European countries with embassies in Albania. Maybe Juan Carlos, EAØJC, King of Spain can help with expedition to Albania?

ZB2EO, Gibraltar
can be found on 21030 around 1700-1900Z and also on 20 m CW and SSB.

ZL8HV, Kermadec
Peter Fisher is now active from Kermadec. He will try to handle his own QSL cards, which will frustrate DXers, as mail is air-dropped in, and only occasionally shipped out by boat. Expect a long wait for this card. QSL to: Raoul Island, via Overseas Mail Branch, CPO, Auckland, New Zealand.

1S1, Spratley Isl.
Pete Peterson, K6EDV is on the way to Philippines and not to Spratley as some rumors indicate. He will check on the possibility to operate from 1S in the spring.

3B8, Mauritius
Lloyd and Iris were not able to get the license in Mauritius and moved to Reunion Isl. as W6QL/FR

3B8CF is active around 7004 at 0200Z and 1430Z.

F6BEF/3C, Equatorial Guinea
was active from Bioko Isl. around 141118 at 1700Z.

3G9, South Shetlands
Three Chilean operators Pedro, CE3BFZ, Ignacio, CE3CKE and Jorge, CE3JQH, were to operate 3G9BSQ from the South Shetland Islands November 13 - 16. QSL to Box 13312, Santiago de Chile, Chile.

5H3RB, Tanzania
Noel, 5H3RB is often on 21230 around 1900Z and if 10m meters is open he operates there on CW. QSL to Box 9534, Dar es Salaam, Tanzania.

7J1ACH, Japan
is Ric, active on 160 m transmitting on 1911 and listening 1830 - 1835 around 1230Z. Skeds can be arranged on 14226.

7Q7LW, Malawi
Les Sampson will be leaving Malawi on May 11 1987. When he operates he can be found on 14285 at 1730 on Fridays talking to G2ALO.

9Q5, Zaire
Tom Gregory, N4NW has arrived in Zaire and is completing his move into the QTH. He has enough room for 160 m antenna and he is planning for slopers on 160, 80 and 40 m. For 10, 15 and 20 he will use a KLM KT34A beam. The rig is ICOM IC-751 driving Alpha 76CA. Tom hopes to obtain license to operate from TN8 also.

DXCC FROM SCRATCH?

What is wrong with the DXCC? If what I hear is correct, the DXCC has changed from a gentleman's club to club in which there is a little or no trust. Gone are the days of Gus Browning's escapades and with them, an era of trust and good fellowship within the DX community. Enter Don Miller and we have had almost two decades of red tape, some questionable judgments in applying the DXCC rules and often, an unrealistic view of how the rest of the world should conduct its amateur radio affairs. Somewhere between the present and the past, there must be a middle ground that will yield the sort of DXCC program which will be fair to all and yet remain a test of one's skills and fortitude in the DX world.

The DXCC is not a basket case and I wish to allay fears that the DXAC is committed to scraping the present program or, that it has an objective slanted towards a "fresh start." That option is just one of many which must be considered and is perhaps one last likely to be proposed. The DXAC is committed to recommending changes to those parts of the rules which are the sources of most of the grievances with the DXCC program. Specifically, the country criteria is overdue for an update and reconcile the piece meal changes which have accrued over the years and to present it in language which is understandable to all amateurs; accreditation has and will remain a sticky issue until some realistic ground rules are established which recognize that all countries do not conduct their amateur radio affairs in the image of the USA.

The DXAC has three subcommittees dedicated to studying these and other areas of the DXCC rules. Your inputs are essential. To date, some of you have recommended "gimmicks" which would diminish the difficulty of awards program. If this is what the membership wants, let your voices be heard. In the meantime, the DXAC will proceed on the premise that the Honor Roll is not to be an "instant jackpot," but is reserved for those who have taken advantage of all DX opportunities to catch a new one. Whether it takes a year, five years, or a life time to reach the top of the awards program, is really not a consideration at this time.

Paraphrasing an overseas DXer's comment on our study: "The DXCC is recognized around the world as a prestigious club and its awards program is the criteria for all countries." We intend to keep it that way.

The DXAC solicits your comments. Put them in writing - telephone calls to the headquarters staff do not necessarily get to the DXAC. Address: ARRL - DXAC, 225 Main Street, Newington, CT 06111.
John Parrott, Jr., W4FRU,
Chairman, DXAC

The DL7FT/SV/A Story

Chod Harris, VP2ML

A major controversy erupted on March 26, when a station signing DL7FT/SV/A and claiming to be in Mt. Athos came on the air. Almost immediately Greek amateurs came on frequency, saying that the station had no official permission to operate from Mt. Athos, and was not, in fact, even in the territory of the monastery at the time! On one point a

station claiming to represent Greek PTT came on frequency and said Frank Turek, DL7FT was going to be arrested.

Regardless of these comments and threats, Frank completed his operation April 1 as planned, and left Greece saying he had all the necessary papers for a legal Mt. Athos DXpedition.

On May 5th, Frank returned to Greece to operate as DL7FT/SV5 from Kos Island in the Dodecanese. While he was back in Germany, the local Greek amateurs continued their protests through their national organization, The Radio Amateur Association of Greece (RAAG). The pressure was effective, as on April 24th the Greek Department of Post and Communications revoked Frank's temporary amateur license. The revocation reads in part:

"Since (frank Turek), in accord with written report made by the RAAG, exhibited wrongful behavior toward the spirit of Amateur Radio, violating even the current regulations (such as using a false callsign, a phony declaration that he was transmitting from Mt. Athos which is forbidden, making sarcastic and derisory remarks to Greek amateurs, etc.), our Department revokes his license which it had granted."

The letter goes on to direct the security forces of Rhodes to locate Frank, take away his license, and seal up his radio until he left Greece. Since Frank was operating from Kos, not Rhodes, the Greek officials did not catch up with him until May 20, the day he was scheduled to leave Greece. At the time, however, they did seal his radio, and remove his license.

Note that Frank's Greek license was revoked after his Mt. Athos operation ended, but before his Kos operation. Thus the revocation should not affect the Mt. Athos contacts. Also, the letter says that revocation was based on the fact that Frank was not in Mt. Athos, nor did he have permission to operate from there.

However, Frank subsequently sent ARRL's DXCC desk a copy of his greek license (valid 15 March until 31 May), his "Diamonitirion" permitting entry into Mt. Athos, and entry and exit visas for appropriate dates. The Greeks had based their objections no the lack of such documentation, especially questioning the validity of the Diamonitirion, which the Greeks claimed did not mention permission for amateur radio. However, Frank's documents clearly include permission to operate amateur radio station, and do, in fact, bear a considerable resemblance to operating permits granted by the Mt. Athos monks to Greek amateurs six years ago. All this papers are under close scrutiny at ARRL Hq, but at this point it looks like Frank's Athos operation was indeed valid.

So where does this leave us? Neither party in the dispute comes well off. Assuming that Frank's documents hold up under close examination (and there is no reason to believe that they won't) then the Greek amateurs were clearly wrong in their verbal and regulatory attack on Frank's Athos operation. Further, Frank's license never should have been revoked, since he was legally on the air from Athos.

On the other hand, Frank was not exactly blameless in this matter. He knew full well that an operation from Athos would provoke Greek amateurs. His 1985 Athos operation resulted in a stiff protest to the DARC, and he could expect more of the same upon his return. Frank might have calmed the waters by arranging for one or more Greek amateurs to share his operating permission, or perhaps by using his obvious talents at arranging permission to obtain a Athos license from Greeks.

Frank was a guest in Greece, and as such had some obligation to his nominal hosts not to generate animosity and dissention, especially not on the air. And the local amateurs had no business shooting their mouths off without researching their case. Some of their on the air behavior was not in keeping with the amateur spirit, either.

So, assuming that Frank's documentation holds up, let's bury the hatchet. The Greeks can drop their protest of Frank's operation (and perhaps convince the PTT to un-revoke his license), and Frank can help some other amateurs get on the air from Athos. Or even better, he can turn his considerable talents toward getting on the air from Albania. He won't run into problem from local amateurs there!

QSL DL7FT/SV/A to DL7FT, 1000 Berlin 19, Fed. Rep. of Germany.

Letter from SV1PL to The DX Bulletin:

... I think that you have to publish everything, rumor or not, but not making comments about foreign associations (like RAAG) and to let your readers know both sides on every aspect of DX. Local Greek laws must be respected from all (foreigners and locals). Since no Greek Radio Ham can take permission no other can take also. (We mean the proper way.)

In the future, we have been told, that RAAG will manage to take permission for Athos, by applying with some selected DX team (foreigners including as guest operators.) Some rumors say that at least one monk will give exams for his license, so we hope it will be easier.

The above are also for DL7FT and any other who tried in the past to operate as SV/A with no written permission. The word "Diamonitirion" as Mr. Turek DL7FT insists it is the written permission, it is only the visa to stay inside Athos as visitor and nothing else. Don't make comments if you don't know the facts, please.

If Don Search of DXCC wants to make it valid or not, it's another story. It's DXCC willingness and nothing else. But not the truth. The truth is that none took a valid written permission (including W6LAS/SV/A) since 1979 and 1980 DXpeditions of SV1IW, SV1JG, etc. We have applied to Holy Mountain Secret Community and they replied that no person with name Frank Turek took such a permission to operate Ham Radio equipment.

So all visitors take a visa named "Diamonitirion," it is very easy for myself especially to take thousands of "Diamonitirion" and getting on the air as SV1PL/A. And Don Search must take it, of course. Is that what you want for reactivated Mt. Athos? Or to have good, clear documentation for everyone? This dirty story with Mt. Athos must have finally a happy end. I don't know how or when.

But since Monks are very suspicious with all these facts of many people trying to get ham radio permission from there, I think that the better is that RAAG must do her best to keep Mt. Athos clear in the DX scene and we have all the right for it. Or we have better to make official application as RAAG to the Secret Community. They prefer so, they told. Please wait.

P.S. Don't confuse the name for DX (DXpedition from rare country) with any other of National Laws and other gimmicks to have DXCC valid one. Sometimes it will be dangerous.

Best 73, Angelo, SV1PL, RAAG Admin. Council Member, RAAG QSL Manager

VP2ML (TDXB) Comment:

Operating a DXpedition under the guise of a "scientific study of propagation and sunspots" is a standard DXpeditioner ploy. I have used that technique myself from spots all over the globe. It sure beats trying to explain DXCC and DXpeditioning to local authorities. Crazy scientists they can understand, but not the concept of someone travelling to a faraway place only to sit in a stuffy room and shout into a radio. So if Italians had valid licenses permitting the operation, why did RAAG go to the Greek authorities to have the anti-amateur radio document issued?

Further, The DX Bulletin has examined Frank Turek, DL7FT's license and "Diamonitirion." Contrary to the claims of the Greeks, his SV license clearly indicated operating permission in the region of Greece surrounding Mt. Athos, and his "Diamonitirion" equally clearly states permission for amateur radio. His visas show that he was in Mt. Athos during the operation. In other words, it is RAAG that doesn't have its facts right. The possibility exists, of course, that all these documents are elaborate forgeries, but is it really the task of the DXCC desk to do forensic analysis of such papers? Or should they be accepted at face value? In the absence of physical evidence to the contrary (such as letter from Secret Community stating that DL7FT did not have permission to operate), it's RAAG's word against that of DL7FT, and Frank has the papers to back up his claim.

The DL7FT/SV/A operation continues to sit in limbo on the DXCC desk. "Waiting for some papers," was the comment from Don Search. No timetable has been set for deciding whether to accept or reject this operation. TDXB hopes the matter is resolved, one way or another, in the near future.

It seems to The DX Bulletin that the Greeks are actively trying to prevent any operation from Mt. Athos by other than themselves, and they admit that cannot get permission to operate. The most revealing sentence in SV1PL's letter is, "Since no Greek Radio Hams can take permission no other can take also." In other words, if we can't operate from Mt. Athos, then neither can you. This is not in keeping with the spirit of DX.

If the Greeks are serious about putting Mt. Athos on the air, why don't they use the same "gimmick" that IØLJ used? Obviously the Monks will grant permission for such a "scientific study." So what is stopping them?

The DX Bulletin has no quarrel with RAAG "defending its DX turf," but only if they mount their own DXpeditions often enough to provide DXers a reasonable chance to work Mt. Athos. If they can't get permission themselves, then they should assist those who can, in the interest of all DXers. A notice on the monastery wall reads, "This land subject to miracles." Let's hope that we don't have to wait for a miracle to get Mt. Athos on the air again.

(The DX Bulletin, VP2ML)

160 m Bulletin

Founder - Stew Perry, W1BB

160 m DX News

Wally Stefanoff, LZ2CJ

PO Box 73, Levski, Bulgaria

Summer season in Europe means low activity and static crushes on 160 meters. Adding the fact that I was very busy with my dental practice and at home, you will understand why this month's column is so technically oriented.

The only time I have turned my 160 m rig on was when Victor from UZØAXX and his beautiful wife were my guests. We went to look at my antenna system at my second (contest) QTH. Turning the rig on for a brief moment we realized that UG6GAW is back on the air with his new transceiver and new aloper antenna system putting that unbelievable signal we used to hear so often before.

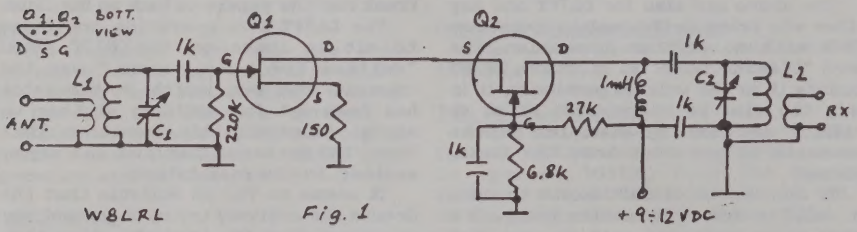
I have promised to tell you more about the USSR top banders meeting held this June in Kiev, but I still did not receive the information. Perhaps I will have it for the next issue.

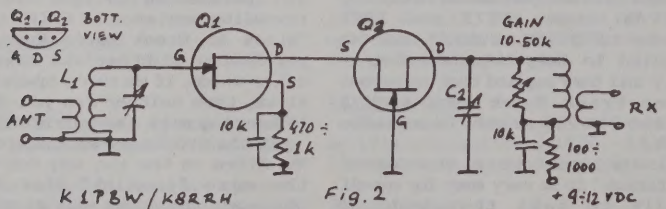
After N7CKD has listed holders of 160 m DXCC, many of you probably ask why is LZ2CJ not listed there. I claim more than 100 countries worked on 160 and have a very competitive station on that band. Well, the answer is, as I wrote earlier, that first of all I am a contest operator and second, my goal was to work 100 countries during one calendar year. I have achieved just that last year. The number 100 country was worked on the last day of the year. As far as QSL cards are concerned, I have never bothered collecting them. I know when I work the station and I don't need the proof to show somebody else that I have worked that station.

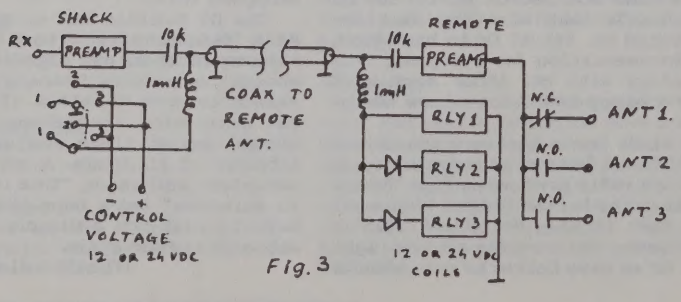
Although I have now 111 countries confirmed and 125 worked, I stopped chasing the cards about a year ago. I operated important contests mainly and sometimes I would work some DX when time permits me. This doesn't mean that I do not listen on 160 even when I am at my home QTH in Levski. I know that many will not agree with my QSL collecting philosophy, but that's the way it is. Winning the contest means a lot more to me than chasing DXCC and QSLs.

ZONES COMPETITION

I would like to thank N7CKD for the correction of his WAZ standing. My info was taken from the letter I received quite some time ago. I would like to encourage all of you who chase the zones on 160, please submit your totals and lets keep the WAZ standings updated.







DXCC TOTALS

Things are slow with this one too. There was no input except for W4PZV. I have tried few times to get some info over the air, but since I have only antennas for 160 m and was active very little, there is a big void in this area. Please drop us the note with your standings.

We would like write about 160 m DXers and contesters. I am going to send the questionnaire to all 160 m DXCC holders with hope to receive some information about you, your equipment, antennas and operating experiences. Please send us some pictures. They could be slides, black & white or color prints or film. Lets get to know each other!

1982 P42E 160 m Operation

All contesters still remember the great operation by the P42E group lead by Wally, W8LRL, that set the still valid CQ WW DX Contest world record on CW from Curacao in the Multi Operator - Multi Transmitter category. The operators were: 160 m - W8LRL; 80 m - AA4S, N4RV; 40 m - AA6RX, KC8C; 20 m - K2BA, K4BAI, N8II; 15 m - WD4AXM, WB6SHD; 10 m- WA2SPL; multiplier station - N4MM.

Wally, W8LRL, managed to work 390 QSOs, 12 zones and 28 countries. The transmitting antenna was a 100 foot vertical with 120 radials. Receiving was done on 3 Beverages pointed to Europe, South West and North West directions and located about half a mile away from the operating position. The beverages were switched through the coax feed lines as described in this column.

Wally said that he hear over 100 European stations, but was not able to raise most of them due to the low power and QRM/QRN conditions during the contest. RG6G and EW6V were louder than NP4A when their signal peaked at P42E! Here are the DX stations worked: VP9BO, EA2OP, DL1YD, K1XA/6Y5, NP4A, J73D, EA9EU, EA8AK, EA3VY, 4M3BPT, PY1ARS, PY1MAG, G3RPB, G3KMA, DJ8WL, K5NA/KP2, GW3YDX, DKØDM, 8P6J, 9Y4VT, K4ZIN/C6A, HH2VP, K6UA/MM Z7, KP4DL, ZB2EO, VP2VA, 6Y5IC, HK3YH, RG6G, 4X4NJ, EW6V, PY1ZAE, FG7AM, PJ9EE, YV3AGG and 5N8ARY.

It is easy to see that it was a top notch operation and it helped to make that 23 million point score and secure the world record while on the slide of the sunspot cycle.

160 m PREAMPLIFIERS

Most of new generation transceivers have built in preamplifier, which can be used on all bands including 160 meters. This is a big help when using low gain antennas like beverages on 160 m. Those preamps are not always optimized for 160 meter operation.

Here we present some preamplifiers designed by the top guns on 160: W8LRL, K1PBW and K8RRH. There are few important factors that have to be pointed out. The preamps should be mounted in

metal boxes and metal chassis. Use metal shield between the input and output circuits. Use blocking diodes if the receiving antenna is close to the transmitting antenna. The input impedance of preamps is in the range of 50 - 200 Ω. For beverage antennas use 4:1 toroid transformer (Amidon T-80-2 toroid with bifilar #18 or 20 enamel wire winding).

W8LRL PREAMP (Fig. 1)
(20-25 dB gain)

Q_1 and Q_2 are MPF-102
C_1 and C_2 are 500 pF trimmers
L1 and L2 solid # 24 enamel copper wire wound on Amidon T-80-2 toroid core, small winding is 7 turns over the ground end.

K1PBW/K8RRH PREAMP (Fig.2)
(25-30 dB gain)

Q_1 - 2N5953
Q_2 - 2N5950
C_1 and C_2 - 365 pF
L_1 and L_2 FT-82-61 core, 30 - 35 turns of #20 enamel, small winding is 3 turns over ground end.

SYSTEM USED AT P42E (Fig.3)

Preamps used in the shack and at remote location are W8LRL design. The distance must not be longer than half a mile. The remote preamp was powered by 9 Volt lantern battery (or 12 V car battery).

Stew Perry, W1BB

Stew is the living history of 160 m band. He is the Mr. One Sixty! Stew has been a leading 160 m DXer for most of years. He has done the "impossible"- received the number one 160 m DXCC award and has done a lot to popularize and open this challenging band in many countries.

Stew has founded and published the 160 m DX BULLETIN, we are now trying to continue here on the pages of RADIOSPORTING. He has send that bulletin to anyone who asked for it or supplied the postage.

Stew is now well in his late eighties and not as strong as used to be. Gone are the trips to his remote location and staying up for long nights to chase that DX or operate in the contest. He had an Inverted Vee at 265 foot level and a number of beverages for receiving. While at home he used to operate from the station located at the water tower on the hill overlooking the Atlantic Ocean near his home. We will always remember Stew as a fine operator and a gentleman.

de VE3BMV: When I visited Stew's place some years ago, I was delighted with the kindness and warmth that always radiated from Stew and his wife Marguerite. His station is something else. It is a collection of working equipment from spark gap to present. If you ever met Stew, you have met the true ham as we all should strive to be. We wish Stew many happy years to come and hope to hear his W1BB on the air.

Bahri Kacan, DJØUJ, TA2BK

Bahri is well known operator, perhaps better remembered by many as TA2BK.

He started his ham radio activity in May 1956 as an operator of YU1BKL club station. Later his family moved to Istanbul, Turkey and Bahri became one of the founders of TRAC - Turkish Amateur Radio Club and operated with his TA2BK call sign.

Since 1969 Bahri lives in West Germany and using DJØUJ call sign. He was also one of the operators of ZA2RPS, the famous expedition to Albania. He operated from 4U1ITU and since the last year DJØUJ is a frequent callsign on 160. He enjoys the QRP work on CW and SSB and has a quite a signal using the dipole. He surprised many Europeans last fall, when fired up on 160 m as TA2BK from Turkey.

UZ6LWZ, ex UK6LAZ
Len; Vlad, UA6LV; Victor, UA6LO; Alex UA6BEB

UZ6LWZ club station is located in Taganrog city and is well known around the world by many of you. The operators are very active during the every major contest. They also used callsigns UK6LAZ and R6L. Club holds the 5BDXCC and many other awards. They are also closing down on 160 m DXCC pursued mainly by Alex, UA6BEB. Alex is now graduating from the university and not too active on the bands. Antennas used at UZ6LWZ are Dipole, Inverted L (12 m horizontal, 24 m vertical) with beverages on receive. On 80 they use V-beam, 40 m 3 element yagi, 5 el. yagi on 20, 6 el. on 15 and 6 el. on 10 meters. All rigs and amplifiers are home brewed.

RL8PYL, ex UK7PAL
Vlad, UL7-023-158; Vadik, UL7PHF; Yuri, RL8PY; George, UL7PBI; Was, RL7PAV; Al, UL7PAE; Alex, UL7PCZ; Serg, UL7PEZ

Another very active club station in the contests. The operators have rebuilt the entire antenna system over the past three years. On 160 they have a vertical and a full size dipole, plus beverages for receive. On 80 they have 4 element fixed quad, 2 el. quad on 40 m, 4 el. quad on 20, 5 el. quad on 15 and 6 el. quad on 10 meters (SSB) with 9 el. yagi for CW.

Besides contesting they are aiming for 5BDXCC and 5BWAZ awards. All rigs and amplifiers are home brewed

ACTIVITY

UB5
UB5LZK 2100Z/1897 kHz SSB, UB5TN 2315/1835, UB3IAG 2025/1832, UB5UN 1959/1840, UB5WCQ 2205/1838, UB5GKI 2058/2873, UB5FEQ 1740/1867, UT5UDH 2103/1845, UB4IUC 2103/1845, UB4MTR 2050/1844, UB5QMY 2041/1842, UT5AB 2225/1832, UB5GLB 0020/1874 SSB, UB5FBV 0112/1832

UA1-6
UW3PN 0106/1834, UV3DEA 2005/1840, UA6BHB 2317/1833, RA6ATM 2103/1878, UA3QUK 2115/1842, UA4PUD 2235/1850, UA3EHQ 2058/1873, UA3PNN 0248/1835

RC2OCP 2337/1838
UP1BZO 2100/1879 SSB

OK
OL5BPH 0130/1836, OL2BHZ 2320/1832, OL8COS 2347/1838, OK1DWJ 2240/1831, OL5BOO 2314/1834, OK2BYG 0112/1832

OE
Group of OE top banders is on almost every evening around 1835 kHz SSB: OE1DH 2026Z, OE7GPW 2034, OE8PTK 2108, OE5KE 1910.
Helmut, OE1DH has completed his WAC SSB award and received his last card from YV2IF. This was achieved with long wire antenna only 15 m high and 20 Watts of output power. Congratulations!

SV
Takis, SV2AAG was very loud with his Icom IC-735 transceiver and 50 m long LW antenna. Reception is very noisy on this antenna and Takis is going to build the small loop receiving antenna. Greek

authorities are now issuing three letter callsigns. Takis was on 1835 at 0053Z SSB and likes the contests and will give out some multipliers during this season.

I
Chris, I5NPH showed up on 1835 at 0053Z just to say hello and to test his system before the contest season. They usually operate multi operator category and on 160 they are using 40 m high dipole for transmitting, while receiving mainly on beverages. Chris is going to try erecting a delta loop or 4X4NJ antenna. Look for them in the contests.

HA
Hungary finally showed up on 160 meters. HG6N, HG5A and HG9R were among the first who fired up. QSL HG6N via HA6KNB and HG5A via HA5KDQ. HG6N 2047Z/1841.

DL
Peter, DJ8WL is active as usual on both modes and he has now 150 countries worked on 160. DJ8WL 2003/1835, DJ6RX 1825/1836.

EA3JE 2305/1833

G3RTY 2305/1833
GD3IQO/A, operator Joe was located near Ramsey spending his vacation on Island of Man. He was on at 2306/1835, QSL via his home QTH G3IQO.

SM7ALC 2240/1832 CW, SM6EHY 2326/1833.

YU9ARG with outstanding signal at 2048/1832

T77C Tony was looking for W7AWA/OX as many others in Europe, but no luck. He promised to be active again this fall.

OY - DF2PI/OY was active on CW around 4 of Sept. 2200/1832. QSL to his home call.

VU
Riki, 4X4NJ says that VU2TTC has arranged some skeds with Europeans on 160, but did not show up. He probably had some problems with antennas and we hope that there will be more VU2 stations on the air very soon.

UA9
UA9CVM 0225/1832, UA9NN 0125/1834, UA9CBO 2012/1831, UA9SDE 1810/1837, UA9SIF 2010/1834, UA9CVJ 1827/1837, RA9STL 1900/1841, UA9AJX 1817/1835, RA9AKM 1930/1861, RV9CDL 2232/1842, UA9KAA 2306,1833

UM8MKZ 2306/1833

VP2VA has been reported active around 0400-0500Z CW with 100W rig and long wire antenna. He hopes to increase his power to 400 W.

CP8HD and PY1RO were worked from Europe around 0400 - 0600Z.

XE1X worked some Eu stations around 0530 - 0600Z.

I worked AA1K and W3BGN at same time as UA9CVM and UA9SIF at 0221Z on the 6th of September! The band was wide open despite the high level of QRN. That happens rarely on 160, so it was a great pleasure to stay up the whole night and work some DX that appeared on the band on the first call! (LZ2CJ)

80 m DXing

John Devoldere, ON4UN, AA401

ANTENNA SYSTEM HERE

After all the action with 3CØA in late June, things really died down here on the European LF front. The weather got too warm for most of us in the Northern hemisphere to be able to hear the DX from down under with any degree of comfort. I hope you all used the good weather to improve the antenna systems!

I added another 50 radials to my 87 ft vertical, which increases the number to over 130 now. A number are over 200 ft long, the majority measures about 70 ft. During the winter I roll out eight 2 feet wide strips of galvanized chicken fence wire, each about 40 ft. long. I guess it adds up to being a pretty good ground system. Since I added 160 meters to the vertical, I felt I had to improve the radial system. One might wonder however when one reaches the point where the return is not worth the effort any more.

As I don't have the room for a phased array nor the money for a 180 ft. tower and a rotatable yagi or quad for 75/80, I have to fight my battles with the best I can get on my half-acre lot. I must admit though, that I have sneaked quite a few radials in the neighbor's garden, but that is the best I can do. Over the years I have tried various low band antennas, including delta loops, but have always come back to my good old "long" vertical, with a good ground system.

My vertical is made of an 80 ft. 12 inch diameter lattice tower, with a 7 ft aluminum pipe at the top. The vertical is just over 5/8 wavelength long on 40 meters, and is still a reasonably good antenna on that band, although it won't beat a good yagi of course. The 40 meter feed point impedance is approximately 60-j160 Ohms, which can easily be matched with an L network consisting of shunt capacitor of 13 pf (the stray capacitance may be more!) between the base of the antenna and ground, and a coil of 3.3 µH between the 50 ohm coax center conductor and the antenna base. As every L-network transformer yields at least two solutions the other solution consists in connecting a 1.9 µH coil between the antenna and the ground, and 152 pF capacitor between the antenna and the feedline. Needless to say that all values are nominal, and need to be adjusted for minimum SWR.

On 75/80 meters the vertical has a feed point impedance of approximately 100 + j130 ohm. This impedance is matched to the 50 ohm feedline with another L-network, this time having a 550 pF capacitor between the antenna and ground and a 4.5 µH inductor between the antenna and the feedline. The antenna is extremely broadband, and in my case covers 3.5 to 3.8 Mhz with a SWR of less than 2/1.

On 160 meters the radiation resistance is about 13 ohm only, which makes the use of a matching system with minimal losses as well as the best possible radial system mandatory, in order to get reasonable efficiency. Although the 87 ft. vertical could be matched with a simple L network, I use a linear loading mechanism in a configuration similar to what is used on the HY-Gain 402BA yagi. The one way loop length is 24 ft., but I found the required length to be very dependent of the diameter of the loading device. The final design uses 3/4 inch tubing spaced about 8 inches from the tower. The original system used a no 12 copper wire and required a much shorted loading system. The larger diameter should however result in lower losses and somewhat more bandwidth. The measured impedance at the resonant frequency of 1.830 MHz was 18 ohm, which indicates a ground loss resistance of only 5 ohm (that is with the chicken wire rolled out). Consequently, the efficiency can be calculated as 13/18 = 72%, which is not to bad for this band. Another l-network consisting of a 2.1 µH coil in between the end of the loading device and the feedline and 2320 pF variable capacitor between the feedline center conductor and ground. The bandwidth is approximately 75 kHz at the 2:1 SWR points.

I have all three L-networks in a big box buried under the ground at the base of the vertical. Inputs and outputs are switched by relays of appropriate size. I hope to be able to radiate some 160 meter RF soon.

The only poor thing about single vertical antennas is the fact that they really are not the best receiving antennas. As they radiate equally well in all directions, they also hear equally well in all directions, which also means they pick up all the noises, QRN and other undesirable signals. Even though I have only a half acre lot, I have reasonably nice farming neighbors who allow my to run a variety of Beverages across their fields. They are my secret listening weapons. They range from 500 to 1000 ft long. In the summer I have to take part of them down when the farmers get on the fields with the big tractors. If this is not done in time, the farmer will take care of that himself by running them down with all his horse power. This has happened twice in the last few years. Most of the Beverages are two-wire Beverages that can be switched in direction. During the winter I cover 11 directions, just about evenly spaced on the compass. I have been using Beverages for 15 years now and really love those marvels. I have never felt it necessary to use a preamp. Todays' transceivers have a large surplus in sensitivity on 80 and 160 anyhow, and unless you use an extremely long feedline, or a very lossy one, a preamp should not be required. The Beverages are fed via 150 to 500 ft. of coax feedline.

The single vertical and a number of Beverages is a really good combination, but an array made of phased quarter wave verticals gives the added gain on transmit (3 to 7 dB, depending on the configuration), and excellent amount of directive discrimination on receive. Unfortunately most amateur arrays are fed incorrectly and show poor directivity. Two correct ways of feeding such arrays

have been described in the literature, and a third one is used in a commercial product. More about this next month.

LOW BAND SEASON OPENS WITH BANG

I can not remember ever having seen 80 meters coming in full DX swing so early in the season. In early October I started hearing the first West Coast stations. Around the same time the so-called long path opened up between the West Coast and SM2EKM. The first West Coast QSOs (short path) I made this season were all made beaming across South America. At this time of year that's also the direction we get the ZLs in the morning on the long path. That is normal because that is still the area where the lowest MUF exists. October 13 produced my first two KL7 QSOs this year, both coming in via the South pole (KL7U and WL7E). The same day Jim, VK9NS had a good signal on genuine long path. October 23 and 24 (the two last days before the CQ WW Contest) were exceptionally good. On the 23rd, I raised 47 W6/7 stations in just over one hour. An amazing opening. The big guns were way over S9. Dale, K6UA produced a 25 dB over S9 signal on a well calibrated TS940 S-meter! This is one of the best openings I have heard to the West Coast (short path) in maybe 10 years. (See the propagation charts.)

KL7NT has been producing exceptionally good signals on 80 meters from the Northern coast of Alaska. On October 23rd, Dick was coming in 30 degrees East of North at 0450 GMT, peaking 58. Amazing path. At that time the Easterly direction is in daylight, except for the polar regions of course. This was a typical crooked path, probably going from Europe over Siberia into Alaska. Certainly not a straight line path! Via the normal short path (340 deg.) Dick's signals were at least 4 to 5 S-units weaker. One day later, on October 24th, Dick was there again, this time at 0600 GMT with a 58 signal now coming from the normal NW direction. Not a peep from him from the NE direction that time! A 50 degree path shift in one day time.

VERTICALS AND POLAR PATH

I have always been amazed how good verticals work on polar paths. Let me explain. Very often horizontal antennas at relatively low heights, which are certainly producing much higher radiation angles than my 90 ft. vertical with 150 radials, produce very competitive signals on East-West and West - East paths. Typically these antennas will often outperform a low angle radiator for North South paths into equatorial areas. But when it comes to getting through the polar areas, the vertical antennas are really top notch. I have witnessed this over and over again with stations at medium distances with the OX, JW and the KL7s. Stations using horizontal antennas and which are often producing similar or better reports than my single vertical are always at a disadvantage of typically 3 to 5 S-units when polar paths are involved.

LATEST ACTIVITY

Peter, OH1RY, made a trip to the Pacific between October 20 and November 12th, and operated as 3D2RY, T2ARY, A35RY, as well as from 5W1. As expected, Peter gave 80 meters a good going. I know that he has given many Europeans a new country form there. Peter spent the CQ WW phone contest on Tuvalu, and we look forward to a spectacular contest score from there. Peter has been concentrating on working Europe on 80 meters. Of course Peter knows very well how difficult it is especially from Western Europe to work into the central Pacific area, but I know it must have been a real challenge for him to work the most Europeans on the low bands. Congratulations, Peter. I can recommend anyone who is planning to make a DXpedition to the Pacific to talk to Peter and make use of his excellent know-how in matters related to Low-Band openings into Europe.

CQ WW PHONE

What I had expected for the CQ WW Phone contest did not happen: after the super day on Friday, October 24th, according to Murphy, 80 meters should have been flat during the contest weekend. Nothing was less true. Not that the conditions were like on the 24th, but we were able to work a good number of West Coast stations on the short path. In addition to the traditionally outstanding signals from W6RJ, W6NLZ and K6UA, K7SS. They had a whale of a signal during the contest. About 250 Ws were worked during the morning hours with some "casual" contest operating. When I see the amount of DX activity on 80 meters (from the USA), I must think back of the earlier days of low band DXing. I looked up old log books and contest logs. In 1977 during a multi/single effort which resulted in a new world record: 5,117,716 points, we barely made 143 QSO on 80 meters. Compare that to at least 250 Ws in maybe 5 hours of operating on 80 this year. Working the West Coast from Europe during a contest was Utopia in those days. We were happy when we made a few W6s in a whole year! It is really amazing how 80 meter DXing has progressed over the past 20 years.

We all made great progress over the years. Think of how much better most receivers have become regarding large signal handling capabilities. Look how many of the arduous DXers have Beverage antennas to really hear the DX. If it was not for my 6 Beverages (covering 11 directions), I probably would not hear more than 20 percent of what I hear thanks to them. I remember when I first started using Beverage antennas in 1968. I must have been the first to do so.

This CQ WW SSB was also the first big contest I witnessed with our USSR friends in the top end of the band. Of course this has increased the loading of the top segment even further, but it is only normal that they get the same chances as all of us. In the long run it will teach us to spread out over a much wider segment than the usual 3790-3800 where most of the serious DX work used to be done.

This brings me to a QSO I had with W6RJ, who wonders why the Europeans (Scandinavians) only use 3789 and 3798 for working the West coast on the long path. There is of course a historical reason for all this. Many years ago, when 80 meter DXing was quite uncommon, there was no exclusive DX segment. About 20 years ago, in the scope of IARU Region 1, an agreement was reached between the IARU membership societies to reserve 3790-3800 for intercontinental work (DX). Later, due to the increasing popularity of low band DXing, it was agreed to enlarge this segment to cover 3775-3800. At that time 3775 was the bottom end of the USA band (extra class). Now that the low limit of the US band has moved down to 3750, it would sound logic to move the DX window down too, but we must admit that the "non-DXers" in Europe will start feeling unhappy with the little space left. Of course we can "de facto" extend the DX portion to 3750-3800, but have no exclusive rights to the bottom 25 kHz under the present IARU region-1 gentlemen agreement.

RARE DX DEPARTMENT

Jin, JF1IST, has been very active from Egypt as SU1/JF1IST on 80 meters in the last days of October. I am sure he has given many American stations a missing zone on 80 meters. Fine work, Jin.

VQ9GB had an excellent signal on 80 meters around 1545 GMT during the CQ WW Phone contest. We wished we would hear him more regularly on 80. QSL via NA7P.

Other goodies during the same contest were: YB0ARA, UM8MO, UI8ZAA, VP2EC, VP2MW, VO2AC, JY7Z, P47A, VK7AE, ZL1AMN and many UA9s and UA0s and JAs.

UPGRADED TS-940S

By the way, it is the first time I gave my "upgraded" TS-940S a field test in the CQ WW Contest on 80 meters. Where formerly I would have said it is really impossible to do any serious DX work on 80 during the contest, my reborn 940 made it a pleasure to dig for the weaker ones. I'll tell you next month about this fantastic upgrading of my 940.

DXCC FROM SCRATCH?

I have heard that ARRL is contemplating to start DXCC all over again. No Thank you! Let me give you my opinion as to what should be changed in the present DXCC rules: if a country does not allow Amateur Radio, and if these rules have been in effect for more than 5 years, the country should be dropped from the DXCC list.

Maybe we should also have all applicants of the DXCC awards and other awards that have (or pretend to have) certain status, sign a statement that all contacts were made without any help from other stations, which explicitly excludes contacts made through a list?

By the way, now that the new winter Low Band DX season has started, here is the list of countries I still need on 80/75 meters: 3Y, FR/G, KH5P, KH5K, KH9, VP8ss, VU7a, XZ, ZA and ZK1nc.

I have also set out to get the commemorative award from the Northern California DX Club with 80 meter QSOs only. I need to work 40 club members in one year, starting October 15th. So far I have 10 worked. Any club member reading this, look for me on 3501 or 3790-3800 before my sunrise.

Thank you. (ON4UN)

ATTACKED AT AMBOYNA, 1S1DX, 1979

Jack Binder, KB7NW

From the log of the sailing yacht, BANYANDAH, South China Sea, Saturday, March 31, 1979.

0600: Dawn is breaking on this our third day at sea since departing Brunei, North Borneo. On the far western horizon an expanding band of changing pastels is rising and the sea and sky are becoming distinct.

The sky brightens further, highlighting the pearl-grey clouds with crowns of liquid gold, and a charge of excitement runs through all on board. Silhouetted against this display of Nature's beauty, my six passengers are scanning the horizon for the first hint of our mysterious destination. Their chatter sounding like a flock of birds greeting a new an lovely day.

Ahead, somewhere, lies Amoyna Cay of the Spratly islands. According to the Pilot Book, we should find only a fifty yard circle of sand surrounded by a bit of fringing reef. But recent hostile military activity in this area may have changed all of that.

0700: According to my calculations, we should be very close. I shall climb to the mast head lookout for a look round.

0715: Land Ho! A tiny irregularity breaks the otherwise barren horizon, and pointing to it I hell down, "LAND HO!" A cheer rises up from the deck, and happy excited faces turn to follow the direction of my outstretched arm.

But nothing can be seen from deck level, and a barrage of questions assault me as I climb down the fifty foot mast. "How big is it?" "Is it sand?" "Any trees?" "Did you see any building?"

"Hold on, you guys. It was just a tiny blip. In a half-hour it will pop up out of the ocean as if by magic."

0745: Through binoculars, a crescent of yellowish sand is just visible, rising out of the sea as we ride up the swell, disappearing as we slide down. Everybody wants a look through the glasses, but Harry Mead, VK2BJL, the team leader, gets the first chance.

"Jack, is that a rock I see on the right-hand side?" We rise up on a large swell and I see what could be a rock, or a wreck, or almost anything. It's just too small to make out.

0800: It's not a rock, or a wreck. It now looks like a huge tent, like a circus tent, only tan in color. Other objects, possibly structures, are situated about it. I'm beginning to get worried. Who could be on our island. The guys are getting edgy also; Stew, K4SMX, keeps talking about a letter he has which explains that we are a scientific expedition studying radio propagation. He keeps saying that the letter is written in both Russian and Vietnamese. That sounds as if he knows something I do not.

0810: People are visible. Three distinct groups, equally distributed round that tiny mound of sand, with a smaller group at the top. The "top" being only eight feet above sea level.

0815: The smaller, centralized group have begun signalling us with semaphore flags. Everyone turns to me, and John, KV4KV, asks the obvious, "What are they saying?"

"Look, I haven't a clue. But I think I'll anchor the boat just offshore, and row in for a friendly chat. After all, we don't even know who they are. Besides, they can only tell us to go away. Right?"

My wife doesn't look so sure, but the rest of the group not or mumble comments like, "We've come this far, we ought to give it a go."

After everyone agrees, Stew beams his gracious Southern hospitality smile and says, "I'll even go in with you."

*** ONE HOUR LATER ***

0915: We're running scared, powering away from Amboyna Cay just as fast as our eighty horsepower engine will push us. And we're searching, searching the horizon in every direction for any intruder, and deathly frightened we might sight one.

What happened back there was insane. I mean, we're just ordinary folk, just peaceful family men out on an adventure. We meant them no harm, and there was definitely no reason for them to try to kill us.

I guess things really began to happen once we came within a mile of the island. From that distance we could see that the cay was about half the size of a football field, and that at the center were several buildings of clapboard and corrugated iron, as well as two radio towers. We also could see that the perimeter was reinforced with a wall of sand bags, and that on this wall was a sign which stated in large white letters, "BAOTHEP."

I began my final approach with one operator at the radio, scanning the bands, listening for a possible contact with the island. The other operators were on deck, clustered close together by the center cockpit. Judith was at the controls, and I was at the bow, searching for a clear patch in which to anchor.

I remember that it had become deathly quiet; only the distant sounds of a light wind upon the sea, and the sound on my heart beating in my ears as it pumped adrenalin through my body. Then, as I reached out for the anchor release mechanism, an abrupt order rang out, and groups of green-clad men began to scatter.

Explosions cut the air; boom, boom, boom, boom. The physical impact of the concussions slammed into my body, and involuntarily I flung myself to the deck, my mind already beginning to record every intimate detail of those hour-long seconds.

I saw four puffs of grey-white smoke hang in mid-air above the cay. I heard a shrill whistle, and felt heat on my cheek. I saw the five operators throw themselves headlong into the cockpit, heedless of any injury. And as I looked along the deck, I saw the two drums of gasoline nakedly lashed to the rail. For

an instant, my mind's eye imagined a huge blossoming orange-red ball of death erupting from them. And then I screamed, "Move it! Full power!"

Getting myself up on all fours, I saw Judith at the helm, kicking bodies away from the controls. And then, with her eyes sunk deep in their sockets, and her teeth exposed in a grin of animal fear, I watched her slam the boat into gear, and push the throttle to full power.

For what seemed like hours, we waited; rigid and unmoving, our every nerve straining, searching for the slightest warning of a new attack. But, none came. We were lucky....

1S1DX, Spratly Islands 1979 is now history. Directly after the attack, we returned to Brunei, three expedition members thought it too dangerous to continue. Secretly, so did I. But Harry, Stew, and Bill, K1MM, wanted to try again, and a new island was chosen, one which U.S. Government Officials assured us was "safe." That assurance reinstated my confidence, and I accepted the charter. Later, those assurances proved to be nothing more than hogwash.

We docked at Maura port in the early morning hours of the 3rd. We reprovisioned that day, and departed that night. Two and a half days later, on a morning very similar to the one at Amboyna, we made landfall. Immediately, two unmarked ships closed in on us from opposite directions. One steamed directly across our bows only 200 yards off. It appeared to be a phantom ship; no flag, no markings, and no crew visible. When it had passed, we altered course, put on power and prayed.

Again, we were lucky. But all of us thought we had just used up our quota of luck. We were tired and fed up with feeling scared all the time. We decided to head for home.

I set a course for a reef which was charted as completely submerged, but which was near our rumb line, and worth investigating. We arrived the next morning, a glassy smooth day of absolutely no swell or wind.

As we circled the reef, I watched from the masthead, shaking my head in disbelief as we rounded the weather end. Our luck was still holding, for right on the edge, a cluster of coral rocks had been dashed up by some long ago storm, and a baby sand island was forming. It was no larger than my deck area, but it was above water at all tides.

This tiny scrap of sand, surrounded by miles of open ocean, and hostile forces, became 1S1DX, the Amateur Radio station in the Spratly Islands.

The End....

Written aboard the S.Y. BANYANDAH
Cairns Harbor, Australia.

The sailing yacht "BANYANDAH" is a 12 meter long, 17 tonne, two-masted ketch. Launched in 1973, she has now logged over 100,000 miles across the world's oceans and seas. The owner and skipper is Jack Binder, KB7NW, veteran of many DXpeditions, with his wife Judith and sons Jason and Jerome. They are also known as the Four Js. (DJ9ZB)

PLEASE NOTE OUR NEW ADDRESS:

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YASME Foundation

W6KG & W6QL
1986/87 DXpedition

Lloyd Colvin, W6KG and Iris Colvin, W6QL, are going forth on a half year YASME DXpedition, starting Oct.1, 1986. This DXpedition is dedicated to the memory of the famous DXer, Don Wallace, W6AM, who became a silent key a year and a half ago. Don was president of YASME for ten years and traveled to about 100 countries in his lifetime.

Lloyd and Iris expect to spend most of the DXpedition in the Indian Ocean area, and as usual, will spend about three weeks at each stop. Last year, Iris and Lloyd made 50,000 QSOs during six months in countries of Southern Africa. This year , the first operation is expected to be from 3B8 in Mauritius. Operation will include the CQ WW Phone Contest. All QSL cards got ot YASME FOUNDATION, PO Box 2025, Castro Valley, CA 94546.

To make YASME contacts even more interesting and to encourage QSLing, a new YASME Supreme Award is announced. It is a beautiful YASME boat trophy and requires that QSLs for 60 different YASME calls, operated by YASME officials be submitted to WØMLY. There is no charge for YASME awards.

Iris Colvin W6QL Lloyd Colvin W6KG

All that RF energy must be good for something. Iris, W6QL, and Lloyd, W6KG, look great. Here they are sharing their experiences in Africa with your editor Yuri, VE3BMV, at the hospitality suite at Dayton Hamvention. Iris and Lloyd are regular participants in the Hamvention's DX forum. Their operations and DXpeditioning is unparalleled. The number of countries visited and the number of contacts made is astronomical. Also, they keep all the QSL cards received. They are members of the DX Hall of Fame, and they helped many of us to that precious new country.

DON'T FORGET TO SEND YOUR
WRC CONTEST LOG!
You might win one year subscription.

THE BEGINNING DXer

Carol Shrader, WI4K

In the fall a DXers fancy turns to..... Wrong! The answer is not love, neither is it football or the world series. The correct answer is CQ WW. Now for the non-DXers of the group, that stands for the GRANDADDY of all of the DX Contests - the CQ Worldwide DX Contest. Mark your calendar, alert the XYL, take the phone off the hook, and set aside the whole last weekend of October and November for a great DX time.

With a little effort and knowledge it is very possible to work DXCC (100 countries) just during this one weekend. So any aspiring DXer should begin his DXCC quest on CQ WW weekend. Complete rules are published in all the major ham magazines but for the non serious contester it suffices to know that the contest begins at 0000Z on Friday night and the exchange for you is 5905. The first part of the exchange is the signal report. Now you ask, "What about all the people that are not 59?" That doesn't matter. A little listening will tell you that the signal report in contests is always 59. It complicates the record keeping of the serious contester when you give him an accurate signal report. So make him happy. Remember that everybody is always 59! Hi! The second part of the exchange is your CQ Zone and ours is 05. Now that you know the exchange there is nothing to stop you from jumping in and having fun. Work everyone except other stateside stations. But if you plan to submit a log and become a serious contestant, work one person in each stateside zone. They are multipliers for you and will greatly increase your score.

Speaking of multipliers, if you plan to submit a score rather than working the contest just for fun, remember that your score increases in two different ways. You get points for each contact (contacts outside you continent count more than North American contacts). But you can greatly increase your score with multipliers. Each zone per band is a multiplier and your final score is computed by multiplying your total points by your total multipliers. So it doesn't take a mathematical genius to see that a few extra multipliers can make a tremendous difference in your score.

Where should you listen? This, of course, is the bottom of the sunspot cycle so high band (10-15-20) activity will be at a minimum compared to previous years. 20 meters will be where most of the daytime action is. You should be able to work all of the world on 20 meters with a little knowledge of propagation. This will enable you to know when to listen for certain parts of the world. If you are not completely familiar with the behavior of 20 meters then do some advance work by studying the propagation charts in some of the major magazines. The prognosis for 10 and 15 meters is very poor but don't forget to check these bands from time to time. You can work a lot of South American and Caribbean stations without the extreme competition that you will have on 20 meters. There will be a lot of contest expeditions in these areas and you may be able to snag a number of countries and get an easy QSL card as a bonus. More about that later. The hot nighttime bands will be 40 and 80 meters. You should be able to work the world on 40 all night long by having the same knowledge of propagation and day/night conditions around the world that we explained earlier about 20. 20 meters should die very early but don`t forget to turn your beam to the Pacific and check it from time to time. You will be surprised what just might pop up on an otherwise dead band. You can work quite a lot of DX, especially Caribbean and South America, on 160 meters. This low sunspot time is as great for the low bands as it is bad for the high bands.

There are a few things to remember about the nighttime bands that differ from the high bands. Forty meter phone band is allocated differently in the various regions of the world. Most of the DX on 40 meters will be transmitting from 7.0 to 7.1 and listening up in the USA phone band. You must have split frequency capability to work most of the DX on 40 meters. Don't forget to look up in the USA phone band from time to time because you will find a few Central and South American, Caribbean or Oceania stations operating there. The allocations for 80 meters are also different around the world. Most of the DX who cannot operate above 7.1 on 40 also cannot operate above 3.8 on 80. But above that frequency you will still hear a number of stations from our region. Start listening very low in the band as the Russians are allocated a very low spot and many other stations also operate below the USA phone band and listen up.

Never, never, never ask a serious contest station his QSL information or attempt chit chat of any kind. He is there for one reason - To Win The Contest- and your question may cost him a number of contacts and anger him greatly. How do you know where to send the card? That is too much to cover this month. I will explain that in detail next month. Just remember - no questions please!

"Contests are so impersonal", you complain. It is more fun to work someone you know isn't it? But didn't I promise you there was something for everyone in this contest! Many metro Atlantans hit the airlines for this contest and dashed all over the world. 8R1Z who is Rick Doughtery, NQ4I, a Dixie DXer from Peachtree City, was trying to make the record score. Rick is in his second CQ WW from Georgetown, Guyana and will be attempting to win first place in the world after placing third last year. And you certainly do not have to worry about getting a QSL card from this one since yours truly is the QSL manager. The Southeastern DX Club had Mike Greenway, K4PI, from Douglasville organizing a group to operate in the multi-single category from Dutch St. Martin. In addition to Mike, KN4B (Dallas), Atlanta Radio Club member W4GTS (Marietta) and WD4RCO (Atlanta) who were other members of this group. Their callsign was PJØJ. Griffin Dixie Dxer KE4XY will be operating from Denmark as OZ1KWC. For the CQ WW CW Contest, you must wait till November for this one, SEDXC members K4UEE (Marietta) and N4PN (Stone Mountain) plan a multi-single operation from St. Lucia.

Well you have operated the contest and made some nice contacts but your score is really not high enough to submit. Is there any reason to send in a log when you were just working the contest to run up your DXCC total and have fun? There sure is. The CQ WW and many other major contests have a club competition and to many clubs this is really serious business. You might wish to submit your score just to help your club. A lot of small scores will add up just as well as a few big ones. So jump in there. Have fun, help your club out, increase your DXCC total. But BEWARE! Its real easy to get hooked on contesting. Once you start there may be no stopping!

(WI4K)

HAPPY EIGHTIETH K2GL!

It was a very happy occasion at Tuxedo Park, New York, the site of a famous N2AA contest station and a home of Buz Reeves, K2GL. Over 80 contesters, friends and competitors came to pay the tribute and give best wishes to Buz on his eightieth birthday. Way back, Buz, together with Bill Leonard, W2SKE were the first multi operator station in the contests. The multi operator category in the CQ WW contest was actually created because of "them." Bill, W2SKE recalled the old days. Frank, W1WY told some stories from the days when most of us were in diapers and presented Buz with a CQ WW DX Contest Trophy for winning the top USA spot in the multi operator - multi transmitter category. Dick Ross, K2MGA presented Buz with a plaque for being elected as the number one in the Contest Hall of Fame on behalf of CQ and Radiosporting Magazines. Yuri, VE3BMV, presented the IRSA - RADIOSPORTING Special Achievement Award for K2GL and crew contribution to amateur radio contesting. Operators also presented Buz with a plaque and started a K2GL Trophy for CQ WW Contest. Guests from all corners of the United States had the opportunity to visit the famous K2GL/N2AA antenna farm and shack. The principal operators are: (above, L. to R.) Gene Walsh, N2AA; Bill Schneider, K2TT; Buz Reeves, K2GL; Bill Leonard, W2SKE; Dave Rosen, K2GM; Doug Zwiebel, KR2Q; Dave Donnelly, K2SS. It was a memorable evening for all present. Buz was deeply moved, thanked his operator crew and everybody for many years of contesting and a wonderful birthday party. We all wish Buz another eighty years and may his K2GL/N2AA "beacon" be heard in the contests for a long time. (KA2MXO)

K2GL: "QRZ?"
Pileup: "Happy Birthday..."

Richard, K5NA and Susan, KU2Q, N2AA's 160 m crew are enjoying their "indoor beverages."

ANTENNAS

K7GCO

Ken "Judge" Glanzer

202 S. 124th, Seattle, WA 98168

I was at the ARRL National Convention in San Diego. I called down too late to get on the program, but I walked into the administration office the first morning and offered my services. They asked me if I can go on in 7 minutes and I said yes. I asked who for. They said ON4UN didn't show up. So I went down and introduced myself and the audience was very responsive.

At the end of my presentation I stated that if anyone wanted more info on what I've said, leave me your name and address on a piece of paper and half the room left it. They all seem to want good information. I had 35 guys come up to me in the next 2 days and complimented me on the talk and information I gave. On the last day the guy from the administration office came up to me and said "who the heck are you, several people came to my office and asked about you, you were not written up in the program." I felt pretty good about that.

HISTORY OF THE INVERTED VEE

As short wave listener in 1945, I was unable to erect a conventional long horizontal dipole as shown in the antenna literature. I lived om main street in Bridgewater, SD, which was 40 miles west of Sioux Falls or 24,960 miles east of Sioux Falls if you wanted to go the long way around. Tie points above 20 to 30 feet were not available. I later installed tower with pole extensions on my house 55 feet high to hold the center of a 75 meter dipole. Out of necessity I had to tie the ends at points about 15 feet high. (Fig.1) It worked very well and I even ran parallel dipoles for 40, 20 and 10 meters and came up with this new concept of multi-band inverted Vees as a SWL in 1946.

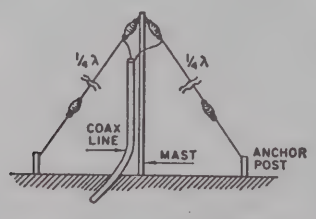


Fig. 1 Inverted Vee

I didn't fully appreciate how well it worked at the time since it was my first antenna. When I got my license later, I used it to transmit with unusual success. I later was able to try a horizontal 75 meter dipole, 45 feet high as a comparison and it didn't work worth a darn, I went back to my inverted Vees.

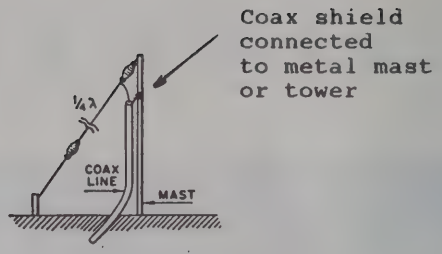


Fig. 2. Sloper

I then got a hold of some coax and got the idea of shorting the shield to the mast pipe at the top, but with only one half of a dipole (heck of an idea). This had to be one of the first slopers (Fig. 2) ever used and it was fantastic in performance on DX. Since I was relatively new in the antenna game, I never realized how effective this was compared to all other configurations eventually tried.

I wrote up the Inverted V for QST in 1948 and no one there believed my claims of outstanding performance considering the antenna simplicity. My claims for the sloper didn't even get an answer back. It wasn't until August 1960 that QST printed my first Inverted Vee article and they never did print my article on the sloper. I guess it was just ahead of its and their time. I didn't realize how good the sloper was for some time as I had to try everything else first in order to find out other levels of performance.

One thing I did find out way back then is that a vertical's performance has been frequently over rated, compared to a properly installed inverted Vee or sloper. South Dakota has some of the highest ground conductivity anywhere. I talked several people with full size verticals and good ground system on a farm into installing an Inverted Vee on top of their 75 m vertical for a test. No one ever went back to the vertical. There is evidence that the radials underneath improved the inverted Vee's performance. W7UQU had unusual success with an inverted Vee over a long fence. Out here in Seattle's poor ground conductivity, I have run thousands of comparisons over 30 years on various quarter wave verticals on 160, 80 and 40 meters of various lengths. My inverted Vee's were typically 10 dB stronger than the verticals which were ground or roof mounted. Others have reported the same advantage for the inverted Vee around the country. The inverted Vee always has a better signal to noise ratio over a vertical but not over a horizontal, which frequently has the signal strength edge locally also.

(de VE3BMV: One has to keep in mind variation in propagation modes and angles when doing comparisons. At different times and for different distances, different antennas can exhibit better performance than others. The antenna that plays the best has the vertical angle or radiation pattern that matches the angle of propagation.)

One comparison I will never forget was the time when W7ESK (now W7RM) was talking to EL4A on 20 meters AM and he was 40 dB over S9. He had a big beam on a big tower on a big hill. I had my Hy-Gain Thunderbird Tribander only 35 feet high. I called Rush on the phone and asked that he have my friend EL4A (ex neighbor W7VCB) listen for me. I was 40 over S9 also much to my surprise. So I said "if the band is so good listen for me on 7005 kHz." He gave me a 40 over S9 there also. Not bad for a 40 meter inverted Vee 65 feet high and a 5 wire cage for

broadbanding and lower loses. I then told him to listen on 3900 kHz and gave him a call on my Hy-Gain Hy Tower. I was S8 and these three contacts were all made running 600 watts in 15 minutes time with EL4A to Seattle. Ken still has a recording of these QSOs. I have also used two inverted Vees broadside fed in phase and a half wavelength apart with great success. I simply have had nothing but outstanding success with the inverted Vee compared to high angle horizontal dipoles and various quarter wave verticals and so have many others. The "other than horizontal or vertical polarization" which W7FA calls "Slantidicular" seems to outperform either many times. Some wise guy calls it "Droopendicular."

Basic characteristics of the inverted Vee are:

1. The more the wires are drooped from the horizontal, the less the bandwidth.

2. With decreasing angle between the wires, the impedance is decreasing (typically to 50 Ω for 90° angle) and the resonant frequency goes up.

3. The bandwidth can be increased with multi wire cage construction.

4. The length of the wires for the inverted Vee has to be slightly longer than the "dipole" length. Use the formula Length of wire [feet] = 490/MHz for starters.

I have noticed that the inverted Vee's performance improves over a radial ground system and particularly when installed just below 20 meter beams. Here it takes the form of a Discone antenna.

QUARTER WAVE SLOPER

The quarter wave sloper is actually a slice out of a Discone antenna. In fact it is virtually the same as one with only the feedline connection reversed and only one wire used instead of multiple wires around the mast that a Discone uses. A beam on top is equivalent to the disk. The disk only has to be about one twelfth wavelength diameter maximum, for proper operation.

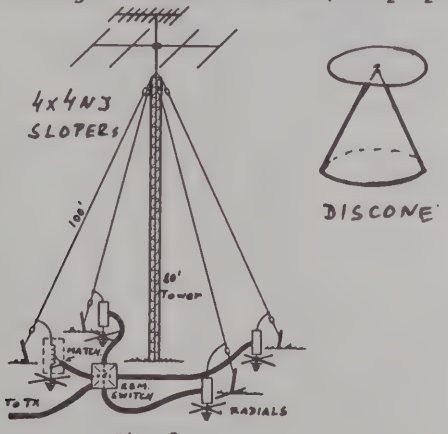


Fig. 3

Some people had trouble with quarter wave slopers needing odd lengths to resonate and even then they had high SWR. The reason is that the shield of coax connects to the tower and it is not always a favorable or comparable impedance, as compared to another quarter wave resonant wire. A grounded tower 60 feet high (no beam on top) presents a high impedance to the shield on 75 meters and is almost equivalent to not being there, so all you have is a half antenna connected to the coax center lead. I found out 30 years ago this problem could be solved by dropping one or two quarter wave radials down near the tower. I have mentioned this solution to sloper article authors several times who printed odd lengths and sad tales about slopers, but they continued to print trouble stories for reasons best known to them.

The quarter wave sloper is one of the best DX antennas for the low frequencies there is for its simplicity. The set of guy wires with insulators installed in the right place are perfect conductors and are there just waiting to be used. Heavy insulated copper wire can be paralleled with steel guy wire to increase the conductivity. Two or four wire cages can be built around the main guy wires for broadbanding and loss reduction in it for slopers.

Multi band slopers with traps have had little play for some reason. An article by 4X4NJ in February 1985 QST describes the 160 m sloper (sloping quarter wave vertical) fed at the bottom, next to the ground. That required radials for the coax shield at each feedpoint and the high current section is on the bottom next to the ground. This may actually create a better reflector effect from the tower and other "unused" slopers tuned as a reflectors. The effective spacing is further away than if the feedpoint is at the top next to the tower.

Each sloper can be phased with another for gain, improved pattern and better front to back ratio. An ideal combination is to have individual coax cables for each guy wire sloper, or a single coax and a remote coax switch like Heathkit's or W0MLY's. The lobe off the end of quarter wave sloper fed at the top of the tower is fairly broad for slope angles between 30 to 50 degrees from the horizontal and bandwidth is typically 150 kHz to the 1.5 : 1 SWR points. This can be increased by adding parallel wires fanned out as then the construction simulates the Discone antenna even more. Radial system originating from the tower frequently improves performance of slopers. Attachment of the sloper guy wires to the tower below a beam should be low enough so as not to have an effect on the beam's SWR as the beam is rotated. I have some multi band high efficiency no-capacitor inverted Vee and sloper configurations that will be described in the near future.

There is considerable merit in having supplementary antennas of different designs to compare with particularly in contests such as the 160 m techniques I described in February 1986 RADIOSPORTING. These antennas have the advantage of exceptional signal to noise ratio which is desirable for receive. Transmitting antennas ideal for DX are not always the best for receive - particularly on 160, 80 and 40 meters. The antennas described in the article are particularly useful for local use on transmit if you have a very small lot.

Telrex was selling an Inverted V Kit manufactured under patent rights number so and so. I got a copy of that patent and it related to two rabbit ears fed 90° out of phase at some low frequency for the purpose of creating a cardioid pattern for direction determining purposes for marine use during WW II. The rights had been assigned to the US government. I fail to see how this patent applies to inverted Vee used by hams 20 years later that is fed 180° out of phase. Something gets popular and everyone climbs on the bandwagon claiming credit or ownership particularly when there is money to be made.

There is a book out "73 Wire Antennas" and they are all variations on the inverted Vee. I was a little disappointed that the author didn't reference all the other articles that followed particularly when that is where the ideas came from for the book. For some reason the original prophets aren't getting any honor.

(K7GCO)

TS-940S NARROW FILTER MODIFICATION

John Devoldere, ON4UN, AA4OI

The installation in the TS-940S of the set of 400 Hz and 2.1 KHz filters from International Radio results in a remarkable improvement in selectivity on CW, SSB and FSK.

The very high skirt selectivity and narrow bandwidth, however, requires a much more critical adjustment of the carrier frequency.

In the TS-940S, the equivalent carrier oscillator frequency is at 9 MHz (Xtal X1 on the carrier unit, located in the metal box behind the green display unit on the front panel). The exact frequency of this oscillator can be adjusted by two trimming capacitors, TC1 and TC2, which are accessible from the top of the carrier unit (the two hoes to the left of the space provided for the voice synthesizer). One or the other trimmer is selected via a diode switch (diodes D1 and D2). TC1 is selected when operating in USB, CW, FM, AM or TUNE, via the logic line called USB (pine #11, connector 1 of carrier unit), while TC2 is selected in LSB and FSK via the logic line LSB (pin #10, connector 1 of logic unit).

After the installation of the narrow filters, it became apparent that it is impossible to achieve optimum carrier positioning with a single setting for TC1 for both USB and CW. The same was true for TC2 with LSB and FSK, when the 400 Hz filter was used in FSK, which is normally always done.

The solution is to install two more variable capacitors, switched by two more diodes exactly as done with TC1 and TC2. TC1 will remain in service for USB, AM, FM and TUNE, TC2 in LSB, while we will add TC3 and TC4 for FSK. The logic lines controlling the diodes associated with TC3 and TC4 will be called CW and FSK respectively. The logic on the lines USB and LSB will have to be changed in order to remove the +15V signal on CW and FSK respectively. For this some minor circuit changes will have to be make on the IF board. This IF board will have to be removed anyway for the installation of the narrow IF filters.

Anyone who wants to make the modifications is highly recommended to buy the TS-940S service manual, which is a must in order to properly identify the circuits and components where modifications have to be made.

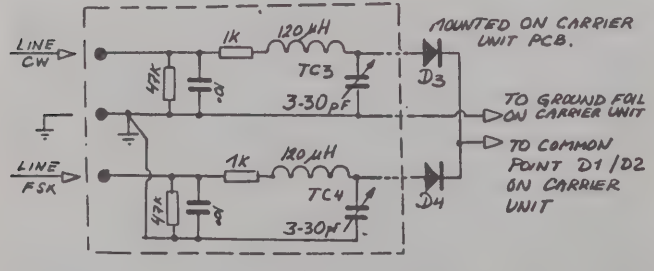


Fig. 1

Figure 1 shows the schematic of the circuit containing TC3 and TC4 and associated components. All components are mounted on a small printed board measuring 1" by 2". This board is mounted on top of the carrier unit, to the left of the voice synthesizer board and in front of the two holes through which TC1 and TC2 are accessible. The additional switching diodes D3 and D4 must be mounted right on the back side of the carrier unit printed board. I drilled three small holes in the metal back cover of the carrier unit, through which the diodes and a ground wire are brought out and connected to TC3 and TC4 on the small printed circuit on top of the unit via wires no longer than approximately 1 inch.

The new diodes D3 and D4 will be connected to the same point of the PCB where diodes D1 and D2 are connected together. The ground wire is connected to ground trace adjacent the trimmers TC1 and TC2.

The changes to the logic lines USB and LSB, and the addition of the new logic lines CW and FSK are shown in Figure 2.

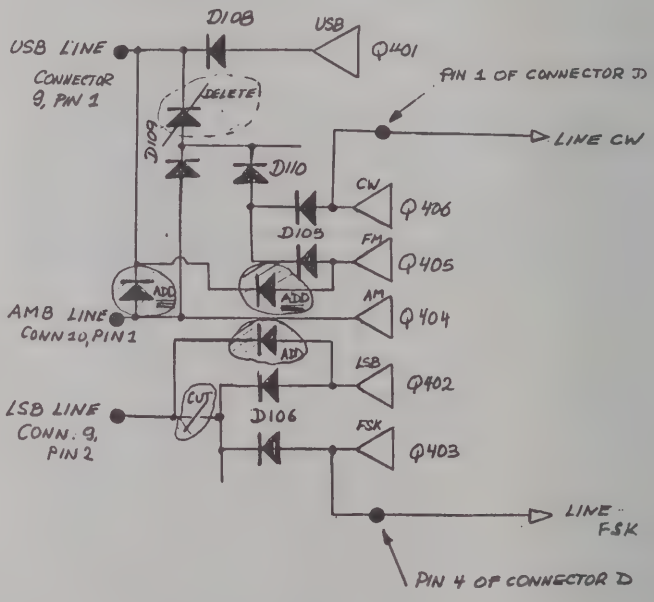


Fig. 2

Locate D109 (a double diode, looking like a regular small plastic transistor), and remove the double diode. Bend the lead connected to a trace going to pin 1 of connector #10 upwards, and reinsert the diode (only two wires now).

Locate pin 2 of connector #9. Using a sharp knife or other appropriate tool, cut the trace going to pin #2 on both side of the land (pine #2 is now totally isolated). Be careful not to damage any adjacent traces.

Connect a small diode between pin #5 of connector D and pin #2 of connector #9. The connector D is one of the 4 connectors interfacing the small daughter board (X48-1430-00-B/2) to the main IF board. It is the connector located closest to the connectors #10 and #9.

Solder a second small diode between pin #1 of

connector #10 and pin #1 of connector #9. A third diode is soldered between pin #1 of connector #9 and pine #2 of connector D. Make sure the diodes are properly polarized as shown in Fig 2. The diodes can be 1S1587 or equivalent.

The logic lines CW and FSK can be soldered to pins #1 and #4 respectively of the daughter board (1430-00-B/2). Two wires are routed along other wiring harnesses to the top of the carrier unit to be connected to the previously installed small board containing TC3, TC4 and associated components.

INITIAL CHECK

Before aligning the capacitor trimmers, measure the logic voltage on the lines USB (pin #1 of connector 9 on IF board), LSB (pin #2 of same connector) and the new lies CW (pin#1 of connector D of daughter board) and FSK (pin #4 of same connector).

The USB line should be high (+15V) on USB, FM, AM and TUNE only.

The LSB line should be high on LSB only.

The CW line should be high on CW only.

The FSK line should be high on FSK only.

ALIGNMENT

USB and LSB: Adjust TC1 and TC2 respectively for best sound audio as witnessed with the monitor switched on. An extra test is to listen to the white noise (disconnect the antenna). In both the LSB and USB position, the pitch of the noise should be identical. A last test is to have a local friend help you in optimizing the setting of the carrier for best audio. The setting is quite critical, and is microphone dependent.

CW: Switch the TS-940S to "narrow," and the CW VBT to normal. Connect a dummy antenna and switch the calibrator on. Tune the main dial for maximum S-meter reading on 14100 Khz (the middle of the passband). Adjust PITCH control for a beat frequency of your choice. Now depress the CW key and the side-tone frequency (monitor on) should have the same frequency at the beat-frequency. If not, adjust TC-3. Adjusting TC-3 will not change the frequency, but will move the passband slightly with respect to the carrier frequency. This means that after each change in setting of TC-3, the dial will have to be adjusted slightly for the calibrator signal to stay right in the middle of the filter passband. A few iterations will yield a perfect adjustment. A final check can be done by using a separate receiver to check if the receive and transmit frequencies are identical.

FSK: With the TS-940S switched to FSK, tune in on a strong 170 Hz shift RTTY signal station having a steady signal. Switch to "narrow" bandwidth with the CW VBT to normal. If the FSK terminal unit is equipped with an oscilloscope cross display, watch the cross display while tuning TC4. Shifting the passband around (vs. the carrier), will make either the mark or the space frequency disappear when tuned outside the passband of the narrow filter. Adjust TC4 so that the mark and space signals are positioned symmetrically inside the passband of the filter). The alignment can be further optimized by reducing the bandwidth through the CW-VBT control.

(ON4UN)

TS-940S PROBLEM ON 10 m

Maurice Harp, KF7L

I have had a problem with my TS-940S on the 10 meter band: There was a distorted audio output when transmitting, even with MONI function OFF. The SWR indication varies radically with the power setting and the power is cut back even with properly matched load.

The problem was found to be RF pickup on the shield of the external speaker lead. The 8 ft. length is resonant on the 10 m band. The external speaker jack appears to have its frame grounded at its mounting, but it is actually isolated by paint. A solid ground at this point corrects the problem completely.

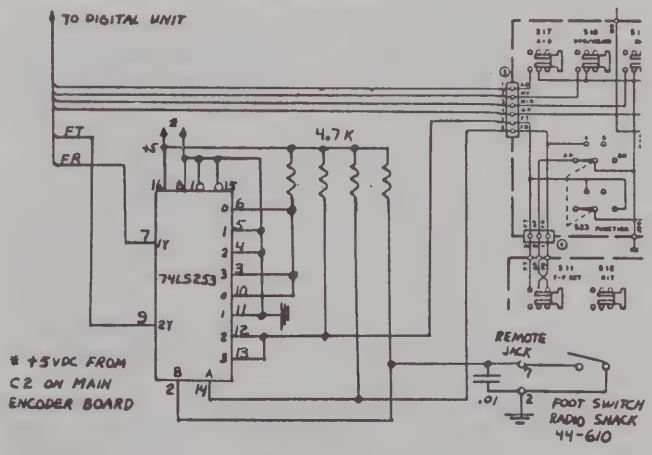
TS-930S REMOTE T-F SWITCH

Joe Gentle, NØBB

When using split frequency operation on CW, there never seems to be enough hands to operate the main tuning knob, keyer message buttons, keyer paddles and the T-F SET switch. This modification brings the T-F SET function out to a foot switch. The operation of the two VFOs is shown in the following table.

VFO Function SW	FOOT SW open	FOOT SW closed
A-R	RX A, TX B	Transceive B
A	Transceive A	Transceive B
B	Transceive B	Transceive A
B-R	RX B, TX A	Transceive A

This modification allows one to switch the VFOs in the two transceive modes and is very useful during a DX contest to quickly switch between two pileups. With the foot switch open, the T-F SET button operates in the normal manner.



This modification takes a fair amount of time to install. The antenna tuner needs to be removed so that the function switch board can be pulled back from the front panel. The circuit was built on a socket and mounted on the antenna tuner cover. This modification should only be attempted by one who has the Service Manual and the experience to use it. The circuit has been in use for two years without any problems. My original design used two 7400 ICs. I would like to thank KCØQ for suggesting the 74LS253 IC circuit. (International Radio)

W3LPL ON PROPAGATION

As recorded at the 1986 Dayton Hamvention Antenna Forum and transcribed by Mike Spenuk, VE3JTQ.

....At night the D-layer disappears so that source of absorption goes away and signals increase in strength. The E-layer does not totally disappear but the Maximum Usable Frequency (MUF) goes down to (at high solar years) around 2 MHz, which means you have absorption on 80 m and a lot of absorption on 160 m. At low sunspot cycle years like now, in the winter, the MUF may go well beyond or well below 160 m and signals can go way up. The MUF of the E-layer is the lowest on geomagnetically quiet nights and another piece of information will be shown a little later to encourage people to listen to why there are vertical nights on 160 m. There is an explanation for this and it has to do with the E-layer. Some of you more serious on the low bands know about vertical nights and horizontal nights and they really do exist and there is a reason. It's been known for a long time.

There are seasonal changes, too. Summarizing briefly, for the 20 m band, you know very well you operate 20 at night during the summer and during daylight hours throughout the winter months. The reason is absorption. In June on 20 m at 8 am the absorption is equivalent to what it is at noon in December. The reason is the angle of the sun--it's much higher in the sky and therefore the ionosphere overhead receives a lot more radiation and thus a lot more absorption occurs. At noon in the summer the absorption on 20 m for a one-hop is 10 dB higher than it is in December. You can quickly say that if you are trying to work Europe on 20 m at noon in July you will need much more power than you would in the winter.

But the good news in summer is that at night the absorption essentially goes away. The D-layer disappears and the E-layer MUF drops down to around 2 or 3 MHz so the absorption is virtually gone. The F-layer has enough ionization in it so that it will normally refract signals on 20 m. So 20 m signals at night are typically very strong. The only negative part to that equation is Sporadic-E which in the middle of summer tends to mask propagation with people 200 to 300 miles away. Signals that you are trying to propagate to Europe instead come down somewhere around VE1. In general summer evenings are excellent on 20 and not very much affected by the solar cycle. So it is just as good now as it will be in three years.

There is one particularly interesting phenomena about Solar Flares that is positive. First, what is the sequence of events that happens to a Solar Flare? I am sure a lot of you have turned the receiver on eight minutes after a Solar Flare has occurred. What you hear is nothing. I know people who have tried to repair their radios when they have turned them on within a period of eight minutes to a couple of hours after a major solar flare and heard nothing--except the locals. You will hear ground wave from 50 miles away, but you will not hear anything from the ionosphere. what has happened is tremendous radiation of X-ray and ultraviolet very intense arriving from the sun at the speed of light (which is why the eight minute delay) and it causes tremendous absorption particularly in the D-layer, but also in the E-layer.

All ionospheric signals disappear. This only happens on the sunlit side of the Earth. It is particularly bad if it happens in the middle of the day--not so bad if it happens in late afternoon or early evening. After about a couple of hours the effect disappears and conditions return to about normal. The interesting effect involves 80 and 160 m. About eight hours after a flare, and lasting around 4-5 hours, the E-layer MUF drops to near zero. The absorbing effect of the E-layer disappears and signals on 80 and 160 m--particularly 160 m--are much stronger than normal. But only that night. The next night you may as well go off the air for a few days.

The next development from the flare occurs within 24-36 hours after the flare: a magnetic storm. Particles arrive from the sun and the effect can be observed around the earth within a couple of minutes. The particles are trapped by the magnetic field of the earth. This storm can last for several days. It is a universally bad occurrence. About the only unusual propagation that might be of some interest to some occurs in the evening. Sporadic-E occurs along the auroral areas and you can occasionally work OH's and UA9's; even JA's on the Sporadic-E path on 40 m. That is the only good thing about flares; everything else is negative. All you can do is wait.

The aurora is a visible phenomenon and if you work 2 m it would be a good time to look for DX. A fellow in my immediate area (W3IP) managed to break the terrestrial record on 1232 MHz in February, using the benefit of this on 432 MHz (?).

How can I use this to my benefit? There are lots of implications to all this. On 10 m the good news is that absorption is very rarely a factor. You can look in the charts that appear in some magazines to predict angle and use them fairly accurately. Ten meters is usually only restricted by MUF; absorption and the LUF are rarely problems. Generally for more than one hop propagation, for example east coast to Europe, or East coast to JA, or long distance to South America, the bigger the antenna and the higher you can put it the better it will work. This is an awfully generalized statement. But the rule on 10 m is "the higher the better." Keep in mind we are talking long distance so if you want to be able to work to the Caribbean effectively you probably want a lower antenna.

On 15m the same rule applies particularly at this point in the sunspot cycle. But at the top of the sunspot cycle there are some characteristics of the 20 m band. E-layer absorption occurs and is most acute around midday. Those of you that operate in the southern part of the United States see this occur at about 10 or 11 o'clock. It is a very strange thing if you have not heard it. The band is loaded with signals, still plenty of European signals coming through apparently still pretty strong, but if you look at the S-meter they have gone down a unit or two compared to what they were before. But the band is still loaded with them, but if you are a contester you cannot work those stations by the hundreds and even if you call them chances are that someone further north in the U.S. will get through

first. There is nothing you can do about this. The problem is angles. The lower angles are masked by the E-layer, the higher angles are absorbed somewhat by the E-layer. So the only thing you can do is use the higher angles, suffer some loss, but still be able to make some contacts. On 20 m the big factor is absorption. Virtually all long distance paths are in daylight areas. The only path that does not fall in this classification is the path from the USA to South America during the evening. This is a dark path. D-layer is not a problem, E-layer MUF is way down so it is probably a low angle path. But virtually any other path on 20 m is masked by E-layer absorption and relatively high angles are important. It is not surprising that most of the really effective antennas on 20 m are between 70 and 110 feet high.

Forty meters has a little of both. In the daytime it is highly absorptive. The Europeans that are heard on the East Coast at 1 pm in the afternoon are coming at us at extraordinary high angles. You can work them with a low antenna--70 feet high. But on the other hand, minutes after the sun goes beyond the horizon the D-layer absorption goes away, the E-layer MUF rapidly drops to well below 7 MHz so absorption is not a factor at all and the low angle antenna works well. On a disturbed day, the situation is sort of half way in between. On 40 m, the bottom line is that you need two antennas: one for high angles and one for very low angles.

Eighty meters is a fascinating band. It is very highly absorptive in the daytime which means the angles are very high. Absorption can be low in the winter at low sunspot number cycle years. But in summer absorption is quite high even at night because the E-layer MUF is still quite high. After all, the sun sets later in the evenings. Polarization discrimination begins to occur on 80 m and even more so on 160 m. 160 m absorption is the case nearly all the time. Polarization discrimination is present most of the time on DX. You really cannot put up a really high antenna on 160 if its horizontally polarized so if you want to get low angles that can be used on low absorption nights you need to use a vertical. Because 160 m is so close to the gyro-frequency of the free electrons in the ionosphere when a wave propagates through the ionosphere it splits into two pieces: one of which in mid- latitudes regions typically tends to be generated by horizontal waves; the other is typically generated by vertically generated waves. As it passes through the ionosphere, passing through the D- and E-layers, the single wave splits into two waves, one of which travels higher in the ionosphere and one lower. When it comes back out of the ionosphere it joins back up again in a random fashion and the resulting polarization at the other end is somewhat random. At the lower frequencies--160 m in particular-- those two components of the wave undergo considerably different absorption, but only on those bands. So the net result is that whenever absorption is a factor on 160 and 80 m at these latitudes the magneto-ionic component that is generated by a vertically polarized antenna typically is dominant by at least 6 to 8 dB compared to what a horizontal antenna produces. But only in directions that are relatively normal to the magnetic field on the earth. The bottom line is that at nights on 160 m when there is absorption if you are propagating to Europe or Africa, or South America, or VK/ZL, KH6, on those nights a vertical antenna will be much better.

To the south it does not make any difference. There is no significant difference between vertical and horizontal on those bands. So if you can get up a very high, horizontal antenna on 160 because of the inherent efficiencies of the horizontal antennas it will almost always do better than the vertical. But only if you get it very high--more than 100 feet. It does not make any difference on 40 m or above. It is occasionally a factor on 80 and always a factor on 160 m.

Earlier, angle of radiation and high antennas were mentioned. About the lowest angle of radiation that is useful on any band is about 3 degrees. On 10 m you can produce an angle of 3 degrees with a horizontal antenna at 140 feet. If you are prepared to give away 3 dB to the biggest gun on the band then your antenna need only be 80 feet high. A 50 foot high antenna on 10 m would be 6 dB down from the highest antenna. That is one of the reasons smaller stations do well on 10 m. Six dB is not all that much loss. The bad news with the antenna at 140 feet, at angles of 8 degrees which is useful for working into the Caribbean and South America or even Europe during high sunspot years, the 140 foot antenna produces a null that is 20 or 30 dB deep at 8 degrees so you need more antennas.

On 15m the situation is much the same. Six dB down from the 3 degree radiation angle occurs at 60 feet high.

On 20 m useful angles are 8 to 15 or 20 degrees with optimum heights around 80 to 100 feet. Any higher and you better have a lower antenna. On 40 m where absorption is a serious factor during the daytime and less of a factor at night, to produce high angles on 40 m in the order of 25 degrees you want an antenna at about 80 to 100 feet for 40 m daytime. For 40 m night-time 140 to 200 feet is not too high. There are a wide variety of antennas that work. If you are serious you better use a vertical on 160. It is a good choice on 80, and you need 50 to 100 feet (or higher) to work on 40 through 10 m effectively.

QUESTIONS AND ANSWERS

Q. How about a vertical yagi on 10 m?

A. It is good and bad. Such an antenna is capable of producing very low angle radiation. If you look at some of the over-the- horizon radars, they use vertical polarization. They do it in one of two ways: You put it on the ocean front so that the 6 dB reinforcement you get from the ground reflection occurs with high efficiency; or you put a ground screen which extends at least 10 wavelengths in front of that vertically polarized antenna. So if you are going to use a vertical on 10, you have to do one of those two things.

Q. There are times when the K index can be as low as 0 but 80 m will still have high absorption over the Atlantic path in November. Also, what about non-reciprocity on the Atlantic path around sunset. There is typically a 20 dB difference between receive and transmit.

A. In the winter there is something called a winter anomaly. This anomaly is high absorption in certain areas that otherwise should not occur. I have only read a couple of articles that mention directional attributes. From my own experience I know when I operate form Maryland on 80 m there are times when I cannot get through. My rationale has to do with local noise and interference at the easterly end of the path. At the end of the path where it is dark, particularly after midnight, the absorption is very low

so you have strong local signals but more importantly lots of thunderstorm-type noise. On the daylight end of the path or shortly after sunset, absorption is a big factor so you do not hear the Thunderstorm noise and local signals are depressed. I think this is the more common case. There may in fact be other causes, but I think this is the more common case.

Q. Regarding horizontal and vertical antennas, is the advantage really due to polarization or is it simply a case of optimum angle of radiation?

A. It is definitely polarization. This has been subject to intense study in the professional field and it has to do with the two magneto-ionic components that every signal in the ionosphere splits into, and the difference in the absorption near what is called the gyro-frequency. It occurs all the time on 160 m.

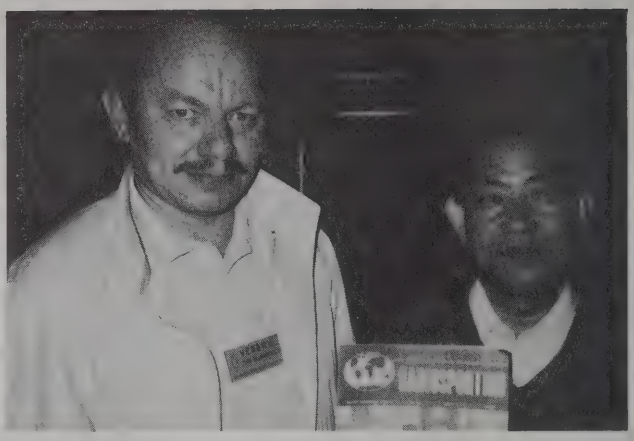
Q. If you look at the propagation as more conducting, many "anomalies" are actually normal occurrences. Regarding one way paths--there are cases where atmospheric noise or local QRM makes it hard to hear, but quite often there is really 20 dB difference, particularly going east-west. With the conductive approach, the analogy to a dirty fibre optic cable on one end where the signals come out demonstrates that the angles are not distinct. The layer looks like a dirty fibre optic which becomes a secondary source and radiates everywhere. But to enter the layer, there is a very critical angle.

A. In the case of ionospheric tilt this is true. When one path terminal is on the sunlit side and the other terminal is in darkness there are definitely tilts and there have been many papers written on how to inject a signal into the tilt so that you can take advantage of it. But as I mentioned earlier, this topic of propagation is so vast that everyone in this room could study it and only just break the surface. It is a very complex subject.

Q. Is there a good reference for the material covered?

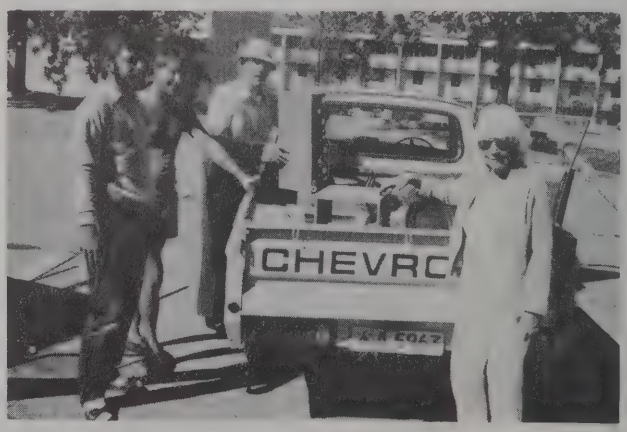
A. There is an excellent reference published by Davies. See the July 1984 Ham Radio magazine for a list of a number of useful references. (VE3JTQ)

The propagation is always good at PJ2FR and Dean Frederiksen, W8ZF sure looks like he is enjoying it. He placed third in the world in the 1985 CQ WW CW contest while operating Freddy's station PJ2FR.



Canadian American Alien, your editor, VE3BMV/WW2 meets the Japanese American, Taizo Arakawa, N2ATT, JA3AER, HS1TA, 9V1PJ and 9M2BL at the North Jersey DX Assn. meeting. Taizo is a contributor to Japanese CQ Ham Radio Magazine and was presented with set of RADIOSPORTING issues. His review is coming up in the January 1987 issue of CQ Ham Radio.

If you worked 4X4 on 160 meters, it was most likely Riki Kline, 4X4NJ, shown here in his neat shack.



Johannes, 7P8DF; (L.to R.) Martin, 7P8CM; Lloyd, W6KG/7P8KG; and Iris, W6QL/7P8QL, loading car for trip to Swaziland, first satellite operation.

A sacriligious re-examination of current wave propagation theory and proposal of a new, more comprehensive and logical alternative. Noted Canadian contester VE3BMV dares to challenge traditional thinking. Don't be intimidated by the title; this is an emminently readable, fascinating, and thoroughly thought-provoking article.

Electromagnetic Wave Propagation By Conduction

An Innovative Theory Based on Fiber Optic Analogy

BY YURI BLANAROVICH,* VE3BMV

Quite often new advances in technology and measuring equipment, given the right opportunity and timing, can produce some surprising results. In my case it was the opportunity to advance from wire and vertical antennas into rotatable antennas. Being interested in the mechanics of radio wave propagation, observing the various modes of propagation and trying to put two and two together, I was not always satisfied with available explanations in the literature. The matter was aggravated when I started to play with high performance antennas: the Razor Beam of my own design. The first version of Razor consisted of 3 Quad and 2 Yagi elements. The next version—on a 60 foot boom—consisted of 7 elements: Yagi reflector, Quad reflector, two Quad driven Log cell elements, Quad director, Yagi director and Yagi director. Two stacked antennas were used on the 15 meter band, the top being at 106 feet and the bottom at 51 feet or alternately at 37 feet above ground. The antennas exhibit a very clean and sharp pattern with back and side lobes being down about 50 dB from the main lobe. The antennas were designed experimentally on 144 MHz models. As far as I was able to tell, those antennas produced maximum obtainable gain per given boom length with excellent front-to-side and front-to-back lobes. (More information on those antennas will be given in future articles.)

Being a dedicated contester, the real test of the antennas came in the contest fire. The excellent *CQ* contests, presented exceptional opportunities to observe ionospheric propagation. With the—Razor Beams, a telescope instead of field glasses. A number of things could be observed that normally would be unnoticed when using "ordinary" antennas.*

The *CQ* contests allowed me to observe a number of anomalies and exceptions to present propagation theories by virtue of the great amateur population on the air at the same time all over the world. At least 5000 stations were active on the 15 m. band.

The stacked antenna system allowed me to observe various angles of radio wave propagation and revealed some interesting facts. The deeper I got into my observations, the more I became convinced that the present theory of electromagnetic wave propagation telling us of signals bouncing between the ionosphere and the earth is not all consistent and perhaps not valid. More thinking and sorting out of ideas led some interesting conclusions that I would like to present here. It is my hope that this article will stir up quite a bit of controversy and discussion, and that it will contribute to the clarification of the matter. I believe that we are faced with another great opportunity for Amateur Radio to demonstrate it's ability to contribute to the science of radio communications.

Presented here are observations that I was able to collect in the limited time available (it *is*, after all, only a hobby). Some of the findings are summarized here. More work must be done to collect more accurate supportive evidence. In future articles I would like to elaborate more on some aspects of the subject with perhaps wider participation by other Amateur Radio operators world-wide.

Reflective Theory

The present radio wave propagation theory is based on the assumption that radio waves are propagated by reflections from a mirror-like ionosphere, returning to the earth's surface, bouncing off it back to the ionosphere and so on. Let's have a good look at this theory and where and how it started, and how valid it is.

Lets call the present propagation theory "reflective", so we can refer to it easily.

Marconi, in 1901, made his first DX contact across the Atlantic accomplishing something that his theoretical friends considered impossible

* Box 282, Pine Brook, NJ 07058

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*They also helped to achieve excellent results from relatively ordinary country—VE—and produced two world records in the *CQ* WPX SSB and CW contests, even with the operator being relatively out of shape!

-spanning a great distance with low power. According to calculations it was impossible to achieve such communication by propagating the signal over that great distance because with distance the signal would get so weak, that it could not be detected. A different phenomenon was at work that would allow propagation of signals beyond the line of sight.

Heinrich Hertz had demonstrated that radio waves propagated in straight lines and found that their direction could be altered by reflective surfaces of conductive material. In 1902 it was suggested in two independent studies by Kennelly from the US and Heaviside from Great Britain that the upper atmosphere consisted of an electrically conducting region that deflected signals across the Atlantic. In 1924 the British scientist. Appleton apparently discovered the electrified region and in 1925 he and his co-workers supposedly found conclusive evidence of its existence by measuring the angle of arrival of radio signals from a nearby transmitter. They figured that signals could only arrive from one direction - by reflection from the area in the earth's atmosphere about 100 miles high. For this work Appleton was Knighted by the British Empire.

In 1925 Briet and Tuve transmitted short bursts of radio energy vertically and detected echoes which they figured could be reflected only by the ionosphere.

Reflections are only one possible explanation for getting the signals from the sky at those angles. Too bad they did not get exposed to more work that was being done in optics at that time. In 1870 John Tyndall presented the earliest recorded scientific demonstration of a peculiar optical phenomenon - light being trapped in a stream of water. In his demonstration he used an illuminated vessel of water and showed that, when a stream of water was allowed to flow through a hole in the side of the vessel, light was conducted along the curved path of the stream. This was the closest thing to fiber optics. Lenses were already known. Too bad they did not see the similarity between radio waves and light, and get the idea of another way of propagating radio waves. Things had to wait. Today we know that light is on the high end or the electromagnetic wave scale.

So this was a handy explanation: "mirrors in the sky" reflecting radio waves back to earth; it was generally accepted. The idea has carried until the present. Any anomalies were judged as exceptions and all kinds of explanations have been tried in order to explain the mechanics of unusual propagation modes.

A Critical Look

Let's have a look at the reflective theory and see how well it fits real life. The first thing that really hit me is the scale to which all those nice pictures are drawn. It is immediately noticeable that the earth is usually drawn in one scale and the ionospheric layers are drawn in another scale, about 10x. See fig. 1 showing the typical picture shown in the literature. It explains how signals might reflect but it does not approximate the real geometric condition. Figure 2 shows the earth and the ionosphere drawn to scale. The average height of the F1 layer is around 180 km and the F2 layer about 500 km on a summer day. Assuming an average launch angle of 11° on the 20 m. band, it seems that we need about four hops to propagate a signal one quarter way around the earth. Now if we work Europe on long path, we'd go about twelve hops. Considering the natural dispersion of the signal with distance and loss per reflection off the ionosphere and the earth,

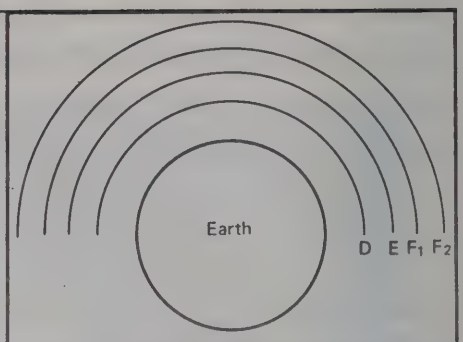


Fig. 1- Typical presentation of ionospheric layers grossly distorts actual relative sizes and distances.

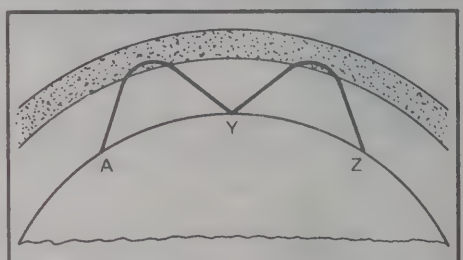


Fig. 3- Conventional graphic representation of ionospheric reflection.

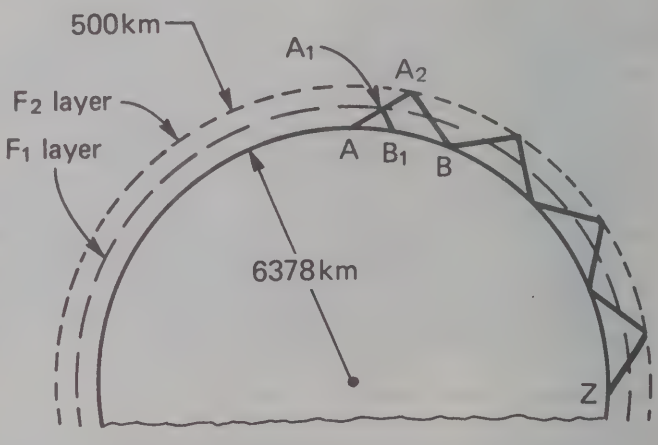


Fig. 2- When the earth and ionosphere are drawn to scale, and accurate geometry is applied, the unlikely situation of four F2 reflections for a North America to Europe contact becomes evident. Long path would require twelve such reflections.

it seems to me that it is very unlikely that we could have any signal left at the other end.

Another questionable thing is the mechanics of the reflection from the ionosphere. Figure 3 shows the typical picture used in the literature explaining ionospheric reflection. In order to reflect signals one would expect a good reflective surface, larger in size than the wavelength and of good conductivity (reflectivity) with clearly difined surface border. But we know that the ionosphere (atmosphere?) is very thin and molecules are far apart from each other. I find it hard to believe that we can get sufficient reflection of signals from that type of medium to yield the signal levels experiencing in Amateur Radio. The shape of the curve is also very unusual, it looks like refraction over about 270°. In reality, the ionosphere would rather absorb the energy than "turn it around". So I am not very convinced that the mechanics of reflection are all that clear and acceptable.

Various propagation modes that cannot be explained by present theory are labeled as exemptions and there is great deal of speculation and explanation trying to find the place for them and make them fit the theory. For example, transequatorial v.h.f. propagation: signals bouncing off ionized bubbles; one way skip: investigation inconclusive; sidescatter, backscatter: bouncing a signal from

an area of the earth which is reachable via the ionosphere from both ends of the path.

We will not elaborate too much on them; there is enough mentioned in the antenna and propagation books. We will try to explain these exemptions with a new theory.

The New Theory

One reason we are having problems understanding the mechanics of radio wave propagation is the fact that it is very difficult if not impossible to simulate the real situation in a laboratory set-up. We are dealing with sizeable objects such as the earth, the atmosphere and number of variables that make the situation difficult to model here on earth. The best we could do is conduct some experiments using available means and perhaps complement them with studies done using satelites and electromagnetic wave sources here on earth or in space.

The closest analogy we understand and have available is optics and fiber optics. Radio waves and light have one thing common - they are electromagnetic waves with different wavelengths. Recent advances in fiber optics can help us understand the behavior of light propagation as well as radio waves. It is still difficult to find good analogy for the atmosphere because of its nature, there are great number of variables such as variance of height, density, pressure, dielectric constant, moisture content, temperature, chemical composition, charged particles as well as the effect of the earth's surface. The biggest contributor to ionospheric variations is radiation from space, mainly the sun.

When I started to look for a better, more satisfactory explanation of radio wave propagation it struck me that there must be more "conductivity" going on up there than reflection. During my observations over the past six years I came to the conclusion that radio waves propagate in a medium that resembles a cloud or across between a cloud and fiber optics.

The basic of the new propagation theory can be summarized in the following statments:

A majority of the radio waves are refracted and propagated - conducted -along the borders of media with different dielectric constants and are accompanied by scintillation.

The geometry propagation is dependent on the frequency used and the condition of the atmosphere.

The propagating medium has a cloud-like formation with the density and conductivity varying along its profile and dependent on the physical condition of the atmosphere and the amount of radiation from space.

Intrepretation

It is quite difficult to accurately visualize the mechanics of the radio-wave propagation. We are dealing with a three dimension medium with varying density and a cone of radio signals propagating through that medium. The situation is also complicated when considering a broad specturm of frequencies and different angles of refraction and conductivity dependent on the frequency.

In order to clarify the situation and to make it easier to understand we will make some simplifications. The beam of transmitted radio signal will be simplified and shown as a ray. We will use a solid line for relatively strong signal, broken line for medium strength and the dotted line for the weak signal. Density or radio-conductivity will be shown as a heavier shaded area for better conductivity and the lighter shading for worse conductivity.

Looking at figure 4 we have the earth and the atmosphere drawn to scale. The signal is transmitted from the point A. Signal strength decreases rapidly in the line of sight distance and we don't get much signal beyond point B. The main lobe of the antenna puts more signal into the space. Refraction begins at point C. A portion of the signal gets refracted, a portion goes through as shown at D. The refracted signal continues through the points E, G and H, more or less following the curvature of the layer and scintillating along the path. Scintillation is noticed and received as what we call backscatter or sidescatter signals. A portion of the signal is refracted along its path and received at the points W, X, Y, Z. Part of the signal continues through point D to F, where it either gets refracted or escapes into space at S. A portion of the signal from the higher path can be refracted back to earth at point K, at a different angle and combine with the signal propagated by the lower path causing considerable QSB. This is a simplified view of what is happening "up there." In a real life situation it gets a little bit more complicated due to the wider beam width of the transmitted signal, irregularities in the medium, and the range of frequencies and angles of the transmitted signal.

There is an indication that the speed of travel or propagation of the radio waves can vary in different layers and this combined with the scintillation or scattering of the signal, can be observed as Doppler shift of signal's frequency.

Scintillation in this case can be compared to the situation where we have a strong source of light with its beam going through the patch of fog or smoke. Particles of fog will be "glowing" or scintillating and become visible - detectable by our receivers -our eyes. Portion of the beam will continue to propagate after passing through the fog patch.

Supporting Evidence

When observing the rising or setting of the sun and moon we observe refraction of light in the layers of the atmosphere. It is well known fact that sun or moon can be "seen" after they actually set below the horizon, the lag being about 12 minutes in time. Also the image or the size of the sun quite often appears to be larger than normal. This is definitely not reflection. We do not see the "mirror image" but the actual "picture." The same thing is happening when we travel along the highway during a hot summer day. Hot air above the road's surface causes the refraction of light rays and we can see the images of the objects that are actually slightly higher. (sky, fence, etc.) They are moved and blank out the background. The same is happening with 'Fata Morgana' in the desert.

Why should not radio waves behave in the similar manner? Light is electromagnetic wave with very short wavelength. The longer wavelengths are easier to refract or bend and harder to reflect.

During our "muscle flexing" with VE3HGN, who is about 70 miles East of my QTH, we have noticed an interesting phenomenon. While comparing antennas and during tests with overseas stations we found a shift in frequency on our signals when compared to the frequency of the DX station. First we thought that it was a flaw in my equipment, but repeated checks with DX stations confirmed that we were both dead-on the same frequency. But when listening to each other we were about 500 Hz lower in frequency. That could only mean that there is Doppler shift occurring somewhere. That, to my knowledge could be caused by a moving media or source, or perhaps different speeds of propagation being observed from the side. If there is a difference in the speed, of propagation, it would mean that the signals are propagating in the layers by conduction rather than reflection.

Another form of this effect can be observed when passing under the high tension power lines and listening to the car radio on the a.m. band. Depending on the location of the transmitting station and the direction of power lines, when passing under the

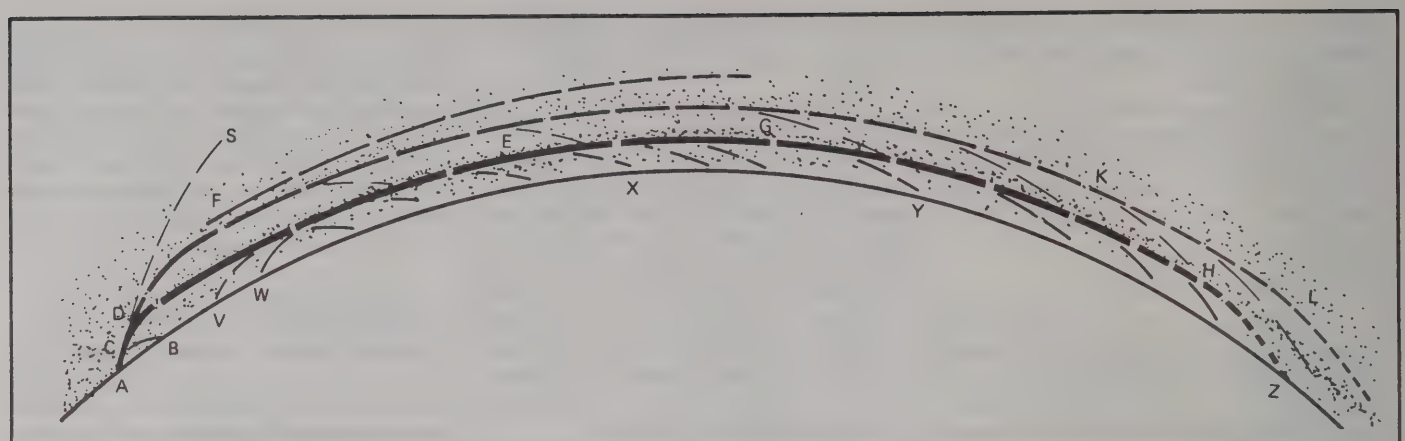


Fig. 4- Scale drawing of a portion of the earth and a conductive ionosphere showing wave propagation.

wires a sudden frequency shift if observed, very similar to what we call selective fading. This can be explained by the different speed of propagation of the signal along the wires as opposed to the speed of propagation in the air. This "selective fading" is noticeable on h.f. and the frequency shift can be also observed on the s.s.b. signals coming from Europe. During contacts with OK2RZ on 15 m. I have observed QSB of his signal and at the same time slightly frequency shifting of his signal.

Familiar "Artic Flutter" and raspy signals propagated from the Aurora are another example of the frequency shift caused by propagation of the signals through the medium. Arctic flutter can be simulated by tuning two receivers to the same signal and slightly detuning one receiver's v.f.o. The signal will sound as if it just passed over the pole, with familiar flutter. With the signals propagated through the auroral region, there is multiple frequency shift apparent, making s.s.b. signal reception almost impossible. Another noticeable feature of this frequency shift is the absence of the higher notes in the audio response of the shifted signals.

Known "Negative Doppler Effect" observed on the satellite signals can also be attributed to frequency shift caused by propagation.

Frequency shift has been observed to be present when experiments were carried out in both directions, east and west. It appears to be present at times on signals going across the Atlantic, but it is harder to detect due to the dominating "direct" signal. It is also more difficult to detect the shift on DX signals, because the shift will be more or less the same in both directions, therefore both stations will be "on the same frequency."

One important thing is apparent from this: when one is trying to calibrate his receiver to WWV, and his QTH is such that he is receiving a "backscatter" signal, then there is good chance that he might be off by about 500Hz.

Let's assume for now that signals are propagated by conductivity rather than reflections and we will have a look at the various modes of propagation and see how well they fit the theory. More detailed descriptions, will be presented in subsequent articles.

Short Path

Lets assume the simplified situation for the purpose of understanding the geometry of various modes of propagation. We will assume again that we have single ray of radio signal and simplified model of the atmosphere.

Figure 5 shows the average situation where signal is transmitted from point A and gradually bends, refracts through the atmosphere with a gradually changing dielectric constant reaching point D, placed on a more distinct border of two layers with different dielectric constants. The main portion of the signal follows the border along line D, E, G. A portion of the signal refracts back to the earth and allows us to receive the signals with relatively even strength along line W, X, Y, Z. Depending on the refractive angles we can receive signals under low or higher angles as shown along D-W and D-X. Point V gets almost no signal, because the angles of refraction will not supply any signal. Very weak signals can be onserved at point V "seeing scintillation at points E and G under low angles with low angle antennas. It appears that we are propagating the signals at considerably lower heights than previously thought. The dotted line shows the path A-M-W as explained by the reflective theory.

A portion of the signal transmitted from the point A is transmitted at a different angle and is refracted or partially refracted and reaches another layer or escapes into space as shown at A-C and A-C'.

Having antennas with low angle of radiation extends the useful range of propagation under adverse conditions with lower angles of refraction.

Day - Night Variations

Let's have a look at the typical path of a signal radiated at a 45° beam heading from VE3 over Europe to Asia, fig. 6. The Sun is over Europe, it's morning in North America, and evening in Asia. The atmosphere is warmed by radiation from the sun raising the height of the layers and changing the dielectric constant of the media affecting the refractive angles. The hump over Europe causes the signal to change its direction - refraction -and this is experienced as a "black out" following noon local time in that area. Some weak signals are being heard, with the typical hollow sound. This is mainly the result of scintillation. It is very difficult to make the contacts from OK to other areas. VE and UA0 have no problems communicating, with conditions actually peaking at UA0 This is a changing situation with time of day, radiation from the sun, frequency, and angles of refraction. Shown example is typical for higher frequencies in the range of 14 - 30 MHz. There is a delay of about 2 hours between the local noon and the "hump."

It is known that with increased sunspot activity the thickness of the atmosphere increases. (This caused Skylab to come down prematurely). This also increases the height of the propagating layers and therefore increases the height and length of the "arches", it allows us to span longer distances and extends propagation later into the night.

We have been told that during peaks of solar activity the lower frequency bands are very poor, mainly because of attenuation of the D layer of the ionosphere. On the contrary, the propagation on the low bands has been better than what we experienced during the sunspot minima. The 40m.

INTERNATIONAL RADIOSPORT ASSN.

P.O. Box 65, Don Mills, Ontario, Canada M3C 2R6 Tel. (416) 438-6313

April 18, 1985

Dear friend,

Thank you very much for joining the IRSA and for your subscription to RADIOSPORTING. Your support is very much appreciated.

We are very sorry about the delay with the certificates and the badges. The amount of workload with producing the magazine, my personal workload and some problems with our equipment just made it difficult to do it earlier. Your patience and support is appreciated.

We were trying to get a large "hospitality suite" at Dayton, for programs and meetings. Unfortunately, the recent closure of a downtown hotel and some misunderstanding with So. Ohio DX Club, disrupted this effort. We will try to get in touch with you through personal contact either at the RADIOSPORTING booth (#109) or in the evenings at the hospitality suites. We will make better arrangements for the next year.

As a member of IRSA we hope that you will act in the spirit of good sportsmanship, that your signal quality and operating techniques will be an example to others. If you have an opportunity to promote quality and proper operating in your area, local club or conventions, please do so.

If you can make arrangements and represent the IRSA and RADIOSPORTING at your local hamfest, please let us know. We will send you the necessary material, signs, magazines, etc.

We welcome all DX and contest clubs to join the IRSA. Also, we would like to have the club president or representative on our board of directors.

We have a number of projects lined up such as: video tape presentations, QSL printing for expeditions, contest forms and many other ideas. If you would like to help or have a particular idea in mind that would help to promote the quality and sportsmanship in amateur radio, please let us know.

As a member of IRSA you can use the IRSA logo on your QSL cards and correspondence. Please encourage others to join the IRSA and tell them about the RADIOSPORTING magazine.

I decided to start the IRSA and the RADIOSPORTING because I felt the need for an independent international organization which would be devoted to the promotion of quality and sportsmanship. RADIOSPORTING magazine should be the mirror of our activity. It should provide lively and useful information on all aspects of interest to the active radio amateur. I also felt that I owe something to amateur radio for providing me with a hobby, a sport, and a source of knowledge and enhancement of my engineering career. Above all, I am thankful to amateur radio for providing the opportunity to escape to freedom. I hope you will join us in the effort to improve the quality of operating in amateur radio so we can preserve this wonderful hobby for our children.

Thanks again for your interest and welcome aboard!

73 and CU in Dayton!

Yuri Blanarovich, VE3BMV

band has longer openings to remote areas of the world. Eighty meters is the same; we are hearing Europeans around 6 p.m. local time. During the 160m. CQ Contest I was hearing G stations for about 8 hours during the night. It appears again that the refracting layers are higher, allowing us to work longer distances with stronger signal levels.

It appears then that with higher sunspot activity, the average height of the media increases, refraction of higher frequencies improves, allowing us to work further and increase the number of useful frequencies for communication.

Long Path

We have no problem explaining long path propagation. It is just an extension of the short path propagation with the signals following the higher layers where the losses can be lower and signals attenuated less. We still get the refraction towards the earth and the signals are heard along most of the path. See fig. 7. The path does not have to be in a straight line. Quite often we experience skewed path. The skewed path can be the result of side refraction which will produce quite strong signals, or caused by scintillation, characterized by low angle and weak signals.

The best case of long path would be the situation when signals get "trapped" in layers with low attenuation, and travel a number of times around the earth causing long delayed echoes. There is also the possibility that signals might enter Van Allen belts and propagate within the belts.

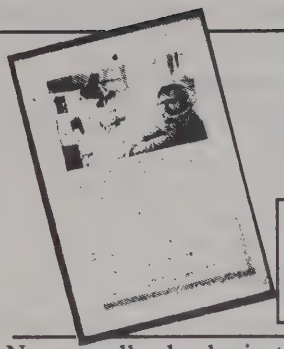
The best answers could be provided by satellites. Observation of the various satellite signals will help to clarify a number of unanswered questions. Any room left in the space shuttle?

Grey Line Propagation

In the case of gray line propagation we have a situation where the medium is more or less at the same height, the refractive layers are more uniform, without major humps and therefore allow us to propagate signals along that path over quite wide range of frequencies with relatively small attenuation or refraction in the unwanted directions. Again the low angle antennas should perform best. When the signals are aimed in the direction of the grey line, just about any point on earth on the grey line can be communicated with especially at the lower frequencies.

One Way Propagation

Quite often we experience a sort of



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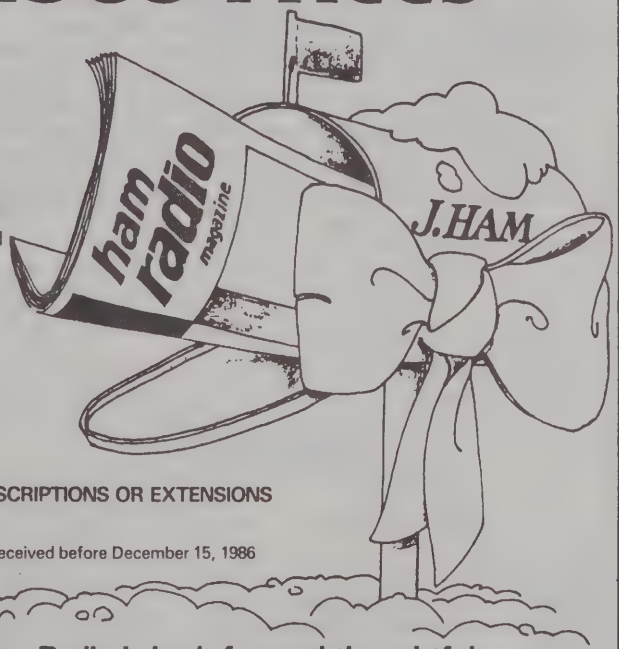

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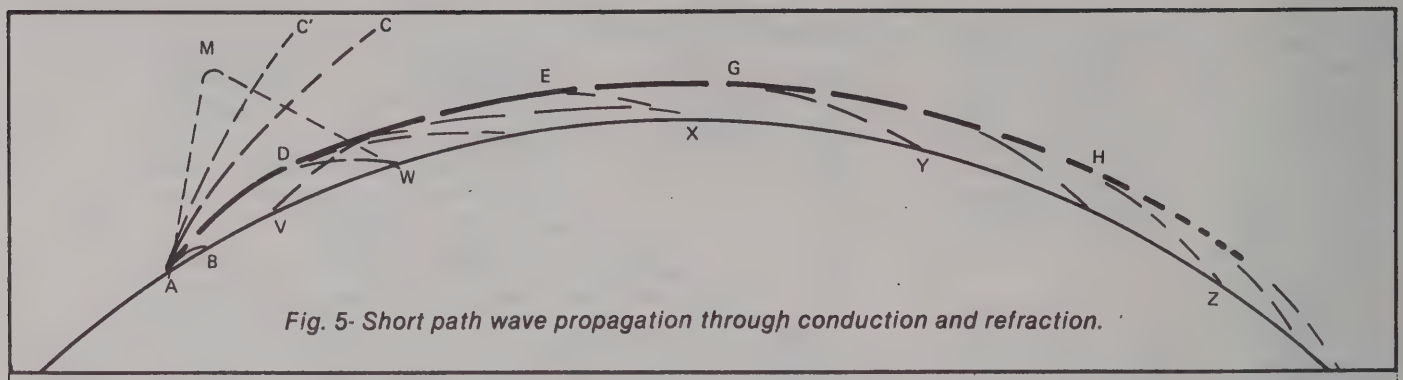


Fig. 5- Short path wave propagation through conduction and refraction.

one way propagation, *i.e.*, on the 40m,. band East Coast to Europe in the late afternoon. Strong signals from Europe are heard, but it is nearly impossible to work the Europeans. When switching between high and low angle antennas there is almost no difference. Later on, signals become stronger on the low angle antenna and contacts become possible.

This can be explained by scintillation, such as we can see on the end of a fiber optic fiber. When light exits the fiber and there are some impurities, it disperses the light at various angles. It is very difficult to enter the fiber under those conditions. A similar situation can exist with our radio signals and the conducting layers. Another form of one way propagation can be caused by different refractive indexes at both ends of the path. Going in the one direction signals can be refracted gradually and due to local conditions at the other end they can exit or be refracted towards the earth. For the transmitted signal the angle of refraction can be different and it will not refract the transmitted signal into the same layer that the received signal is coming over.

Transequatorial VHF Propagation.

This type of propagation was discovered when stations located close to the same meridian were able to work each other, typically across the equator. Contacts were made between KP4 and LU. The world record on 2m. is between 5B4 and ZS. The propagation usually peaks just after sunset.

This appears to be another form of grey line propagation, where we have uniform medium with gradually changing height around the equator, refracting signals over great distances. I would predict that given good conditions it might be possible to establish the contacts on the 2m. band between the VE and LU.

VHF Propagation

Various modes of v.h.f. propagation can be explained and understood better by applying the new theory. If refraction and scintillation are considered, then we can explain most of weird modes of v.h.f. propagation. Refraction then replaces reflection and scintillation replaces scatter. It also appears as mentioned earlier, that signals are propagated (refracted) at lower heights then previously considered assuming reflection by the ionosphere. Horizontal polarization seems to be better for the long haul v.h.f. propagation probably due to the fact that the orientation of borders of the media with different dielectric constants are oriented horizontally, enhancing the refraction of horizontally polarized signals.

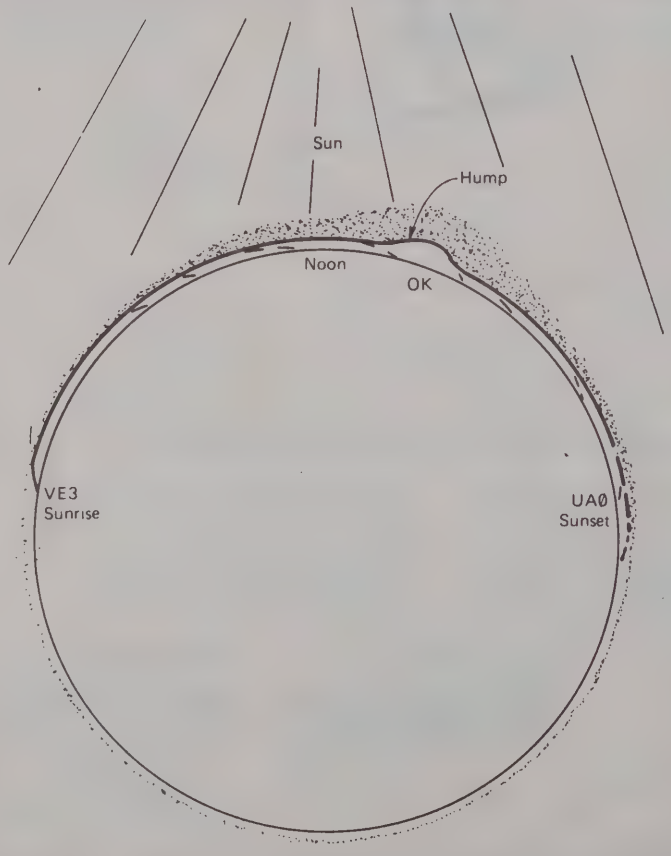
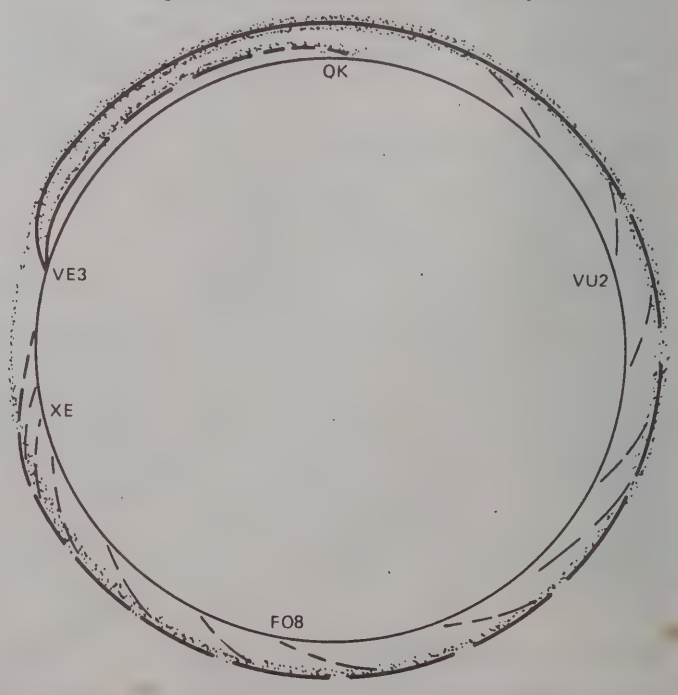


Fig. 6- Illustration of day-night variations in propagation. "Hump" over Czechoslovakia in this drawing results in a "black out" shortly past noon, OK time.

Fig. 7- Long path propagation is similar to short path, but occurs at higher altitudes where losses may be lower.



mysteries are the whistlers. They are bursts of signals in the range of 0 - 30 kHz, usually caused by the lightning strokes. They are "whistles" changing the frequency downwards and lasting from the fractions of the second to 10 seconds or so.

This can be also explained by our theory if we apply doppler shift and multiple path refractions. Consider that lightning could start the whistler and propagation by refraction and variable speed will cause the frequency to change and change the time required to travel a given distance.

Receive vs. Transmit

Having different antennas available during contests and switching between low angle and higher angle antennas I have found during numerous tests that there is quite a difference between the angles of received and transmitted signals. This has been observed on bands from 10m. down to 80m. Also the optimum angles change from day to day, hour to hour. This is very important to know, especially for contesters, who cannot afford to wait in the pile-ups. Ideally the most successful station would have antenna systems capable of directing signal in the desired direction and at the most favorable angle too. The differences at times amount to around 20 dB. The stacked beams are worth gold!

Discrimination against noise is very important too. Quite often we can select the angle where signals would be about the same strength but the background noise from the band is considerably lower. S/N ratio improves tremendously.

Another thing that was found while switching between high and low angle antennas was the fact that most of the so called "short skip" signals are strongest at the low angle. Stacked beams were the best for working W1,2,3,4's on 15m. It made the difference of about 800 US contacts in the contest as compared to another station operating the same band and having a single antenna with higher angle of radiation. This also supports the refractive theory.

Significance

In cooperation with Amateur Radio operators around the world we can further explore and experiment with the propagation of radio signals. We can probably do it better and cheaper than a government or commercial effort. Hopefully we can reinforce the new theory and can open new possibilities and modes of propagation across the whole range of frequencies. Verification of the new theory will have great implications on antenna design, improved reliability of communications, and overall performance of radio stations. It will help to establish better methods of predicting radio wave propagation and develop more reliable means of forecasting propagation based on the factors known to affect it. Hopefully it will set the record straight and make more sense and fewer exceptions.

Hopefully this article will inspire hams as well as scientific institutions to more in-depth study and eventually produce operating formulas and diagrams, which, given the right set of values, will enable us to predict propagation with much better accuracy.

Amateur satellites with transponders on the lower frequency bands such as 160 to 80m., or 80 to 40m., or perhaps one utilizing the new 10MHz band and having the eliptical orbit would be an ideal tools to explore the validity of the new theory.

Let's not be afraid to challenge a long-accepted theory.

Conclusion

What I have tried to present in this article is the expression of what I feel, what I have observed and what I think makes sense. I find it quite difficult to describe or express exactly what I am experiencing. This is partially due to the lack of good clean analogy, partially due to the difficulties of verification and expressing accurately what is happening up there. I hope that I succeed in getting the main message across: "Maybe there are no mirrors up there but more likely something like layers or clouds which can conduct or refract radio waves."

Much more work has be to done. This is just a brief outline of what I was able to gather in my limited available time.

Thanks to contests, I think I "see the light" a little brighter. Contests are moving force and inspiration for many advances in the field Amateur Radio communications, so please put up with the contest racket when you hear it and if you can, give us a point or multiplier. This is the only reward for all the work we put into those super antennas and stations.

I would like to express my sincere thanks to my XYL Sonya for letting me "play with the radio", to Don, VE3HGN for his help with the experiments, to all those participating in the contests and experiments for their cooperation and valuable reports, and last but not least to *CQ* Magazine for providing the opportunity to publish the theory for the first time and for supporting the finest in Amateur Radio Contesting.

I hope to see you all in the next contest!

ON4UN

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SOFTWARE

This is a collection of professionally written software which is dedicated to the serious DXer and more so to the LOW-BAND DXer. The software is a complement of ON4UN's new book LOW BAND DXing, to be published soon by the ARRL. By itself it is a collection of unique design programs for LOW BAND antennas and arrays, as well as operating tools of very high precision. 30 programs are packed on a diskette.

The software is available in different operating systems: DOS 3.3 for Apple IIe and IIc, CP/M for Kaypro, Epson QX10 and similar computers, MS-DOS for IBM and IBM compatibles and CPM for the Commodore C-128 (availability December 1986). An Apple MacKintosh version is scheduled for early Spring 1987. Due to the complexity of the programs, it was impossible to make a Commodore C-64 version.

Price: US $19.95

Personal checks, money orders in US dollars are acceptable. Order from:

John Devoldere, ON4UN
215 Poelstraat, B9220 Merelbeke, Belgium

or RADIOSPORTING
Box 282, Pine Brook, NJ 07058, USA.

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For the past five years, KB1T Radio specialties has published a ham radio oriented wall calendar. The 1987 Calendar promises to outdo the previous editions, primarily in the inclusion of additional information pages, and with revised and improved maps. It will also include recognition of important dates in the history of radio. The 1987 Photo Calendar will be available by December 1, 1986 and costs $9.95 for US and $14 for DX, Air Mail postage included. Order from KB1T Radio Specialties, Box 1015-Q, Amherst, NH 03031.

25th Anniversary of OSCAR

You are invited to 25th Anniversary celebration of the beginning of the Space Age in Amateur Radio. Held at the Foothill Community College, Electronics Museum, Los Altos Hills, CA on Saturday, December 13, 1986. Luncheon with members of the original OSCAR-1 team starts at 11:00 AM, Cost $9. Contact Ross Forbes, WB6GFJ, (415) 948-5000 (9 AM to 9 PM PST)

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SUPER DUPING BY COMPUTER

Peter Smith, N4ZR

This is the first of a planned series of articles for RADIOSPORTING on computer programming for contesters. It will present examples of the main building blocks necessary to write your own contest programs, but whether you want to do that or just to understand what goes in inside commercial programs you use, the series should be enlightening.

The author, Pete Smith, N4ZR, is the founder of Winner's Edge Software, which concentrates on the development of real-time integrated contesting software for the Commodore 64 and TRS-80 Model 100 computers.

Note: In this and succeeding articles, Commodore BASIC 2.0 is used for programming examples - some translation may be required for Apple or IBM BASICs, but the main principles are universally applicable. The reader is assumed to have had some exposure to BASIC, and to have access to an explanation of BASIC commands.

A means for avoiding duplicate contacts is at the heart of any contesting program. To be useful in real-time, an electronic dupe sheet has to be at least as fast as manual methods in the hands of a skilled operator.

Because of the requirement for high-speed access, the dupe sheet must be kept in active memory. That makes it important to minimize memory space per call-sign. At the same time, the duping algorithm (computer-ese for "formula," more or less) should be flexible - it should be able to handle call-signs in any format, from M1B to TY11 to FS/W0AAA/FG7, with equal speed and accuracy.

The most convenient form of data structure to use to store call-signs in memory is a string array. Visualize a table labeled A$ at the top with numbered "slots" from 0 to any number you choose. With the BASIC statement, A$(132)="WA1AAA", for example, you can put WA1AAA in the array slot labeled A$(132).

In order to use an array for dupe checking, you need to have a way to place a call-sign in the array, and then to find whether it is there. The simple way would be to put the first call in A$(0), the second in A$(1) and so on. You could then ask your machine in turn whether the call you're searching for is in each successive "slot" in the array. Before long, however, the time required for this sequential searching would become prohibitive.

The solution is what is called a "hashing" algorithm, which derives from the itself a number which can be used as the subscript to denote the position in the string array in which the call is placed. There are any number of hashing algorithms- the one presented here is used in our Contester II real-time contest programs. Its primary advantages are flexibility and speed. While many hashing algorithms depend on finding the number in a call-sign in a particular place, or on a set length of call, this approach can accommodate any call-sign, regardless of length or order of letters and numbers.

As for speed, it is best defined by testing - in a benchmark test this algorithm found dupe and non-dupe calls alike in less than .05 seconds for the first 100 simulated QSOs; even with 1300 calls in the log response time averaged under .3 seconds.

Let's look at a simplified listing of the duping algorithm in Commodore BASIC, to see how it work:

```
 50 DIM A$(1000)
100 FOR J=0 TO 1000: A$(J) ="*": NEXT J
110 INPUT "His Call"; HC$
120 H=0
130 FOR J=1 TO LEN(HC$): H=H+ASC(MID$,j>)
140 NEXT J
150 H=H-INT(H/1000)*1000
160 IF A$(H) = "*" THEN PRINT "NO DUPE":GOTO190
170 IF A$(H) = HC$ THEN PRINT "DUPE"
180 GOTO 150
190 A$(H) = HC$:GOTO 110
```

The logic is fairly easy to follow. Line 50 sets the size of the string array (some BASICs require this, others do not). Line 110 asks for the call to be checked. Line 120 sets H, the "hash code", to zero, and we're ready to check the call against our "dupe sheet."

Line 130 is the key to the hashing algorithm. It and line 140 together step through the call one letter at a time. At each one the ASC function looks up the ASCII code value of the letter and adds it to the total that has already been amassed. The final result, at the end of the call-sign, is a single numeric value for H. Note, though, that AF3A and F3AA have the same H values. The algorithm deliberately ignores the order of letters and numbers in the call, to avoid being locked into any set order.

Line 150 is used to protect against a value of H being derived that is either too high or too low to fit within the dimensions of the array. It wraps around from 1000 to 1, so that 1001 becomes 1, and so on.

Lines 160 and 170 do the actual dupe checking. If 160 is true, then the station has not been worked. If 170 is true, the station has been worked. But suppose another call is in the "slot" where the program checks (remember AF3A and F#AA)? In that case line 180 takes over, adds 1 to the value of H and loops back to 150. This loop continues until either a dupe is found or an asterisk is encountered, meaning no dupe.

It is this sequential search loop that causes duping performance to degrade slightly as the string array becomes full. Testing shows, however, that significant degradation does not set in until after the array is 80 percent full - hence the array in our example can store over 800 calls before the average search time goes over about .3 seconds.

Line 190 is a final step in the process, inserting the new call-sign in the array, and returning to 110 to enter another call.

There is one thing wrong with this simple algorithm. If you assume that M1B is the shortest call you will encounter, then the lowest value of H that it will generate is 77+49+66=192. That could mean that the bottom 192 slots in the array would go unused. Similarly, if the theoretically longest call is ZZ9ZZZ, then the highest H generated would be 507. The solution is to add a line, like the following:

```
145 H = (H-191)*4
```

The resulting range of values of H will then be 4 to 1264, but the overrun above 1000 will be taken care of by line 150. No problem.

Of course, in a practical real-time program, you would not want to enter a call-sign into the duping array until the QSO was in the log. But it's easy enough to move line 190 to the appropriate location, where it will be carried out as a QSO is logged, and not before.

The usefulness of the hashing algorithm doesn't end with duping calls. In fact, anytime you need to compare one string with another, hashing is a fast way to get there. Other applications that we have tested and are currently using include country checking in ARRL DX and CQ WW programs, prefix checking for WPX, and section tracking for Sweepstakes.

Next - a simple single-stroke command interface.

For more information about Winner's Edge's contest software, write to Pete at Winner's Edge Software, 2003 Sarazen Place, Reston, VA 22091. (N4ZR)

CQ WW DX CONTEST SOFTWARE

The CQ WW Module works with Winner's Edge software module - Contester II master program to automate every aspect of operating in this contest. It keeps track running score and both country and zone multipliers automatically, without operator effort. It takes care of sending, logging and duping, freeing the operator to concentrate on making contacts, planning tactics and running up a winning score.

Logging is either to disk or to a printer (optional), and fail-safe techniques are used to guard against data loss due to a power failure. After the contest, a support program produces log sheets by band, sorted list of stations worked and multipliers on each band, and even prints QSO information on labels for easy QSLing.

The CQ WW Module requires the Contester II with Basic Module, a Commodore 64 or 128 and one disk drive. CW sending by computer requires a simple interface - schematic supplied, kits and wired units available.

The CQ WW Module cost $ 16.96, Contester II with Basic Module is $39.95, all postpaid. Available from Winner's Edge Software, Peter Smith, N4ZR, 2003 Sarazen Place, Reston, VA 22091 (703) 620-3776

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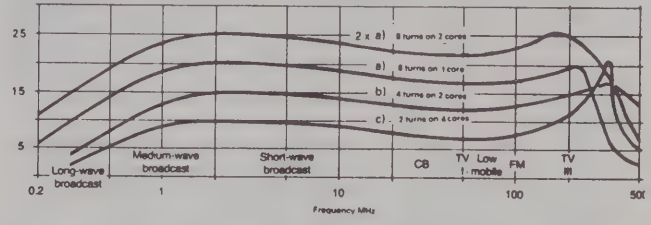
CLAMP-ON-CHOKES ARRIVED!

Most of us have had bad experiences with interference to or from a variety of electronic products. Be it TVI, BCI, radiation from the computers, RF feedback, etc. The problem is usually caused the unwanted radiation of radio frequencies from the cables that act as antennas.

Manufacturers are not paying much attention to the suppression of interference to and from their devices. We all tried the standard cures, but usually the most effective and least "damaging" was the ferrite rod or toroid core type of RF choke. Winding a few turns of the power cord on the rod could do miracles for the stereo amplifier or the VCR. Run out of surplus ferrite cores? Here is the solution, you have been waiting for.

The Clamp-On-Choke is a simple ferrite "O" shaped core that is split and furnished with a plastic clamp. You can simply open the core and clamp it on your RG-8U type of coax (maximum diameter) or wind a few turns of a smaller diameter cable. The Clamp-On-Choke works as a choke without disturbing the properties of the cable. It can be used in all areas of interference suppression on: antennas, digital data, audio, telephone and power cables. It fits onto small or large cables including ribbon cables. It is effective from 0.5 to 200 MHz. You do not have to rewire the connection. It does not affect the safety, function or product guarantee. The Clamp-On-Choke can be removed and reused easily. It functions in the "common mode" not "differential mode." Also, it can filter ground connection leads. It reduces interference picked up / radiated on the cable as a whole. The Clamp-On-Choke elliminates electrostatic discharge problems from people to equipment in dry climate.

The following diagram shows the effectiveness of a number of cores and turns over the frequency.



The cores should be placed at the lowest impedance point on the cable. The more turns wound on the core, the more effective the suppression.

The Clamp-On-Chokes are distributed in United States by COMPUTERADIO, Box 282, Pine Brook, NJ 07058, in Canada by TEXPRO SALES CANADA, INC., 533 Galway Dr., Burlington, ON L7L 2S6.

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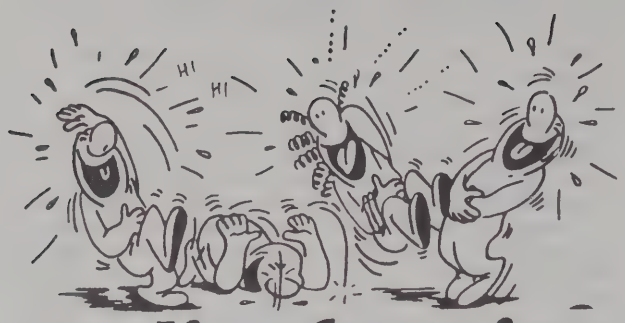


radio funnies

Mike Crabtree, ABØX

HOW TO SAVE DXCC

The Royals' game had just started and I had just gotten comfortable in my recliner in front of the TV, when the door bell rang. I had hoped for a relaxing evening but I found Elmer, WDØSRI, waiting on my doorstep. He had a big grin on his face and a stack of nautical charts under his arm. Some how I had the feeling I was in for a long evening! On our way to the shack we picked up a couple of cool ones to aid the almost certain discussion to follow on the state of the art of DX.

Elmer plopped himself down at the operating desk and quickly scanned through the station log. "Just as I thought!" he exclaimed. "Hugh?" was all I could get out before he started. "You haven't worked a new one in months. The DXCC program has a built-in obsolescence for the skilled DX'er. The more countries you get, the less you have to look forward to working!" Dramatically he said, "You have worked yourself out of one of the activities you do best and enjoy most. Yes, the DXCC awards program has a fatal flaw."

I had heard the argument many times before and wondered why Elmer had such a strange grin on his face after such a serious statement. I urged him on, "You must have a solution, right?"

"I sure do," he exclaimed. "What we DX'ers need is a whole lot more countries to work to keep us actively involved in our pursuit. Me and Harvey, NØLID, have come up with a great new idea that will revolutionize DXCC!"

"How are you going to create a lot more countries without drastically changing the DXCC rules?" I queried.

"Easy," replied WDØSRI, "just make all the oil well drilling platforms that are spread out in the oceans count as separate countries. Just one simple rule change and we could have over 2000 new countries to work overnight!"

Completely dumfounded by this radical proposal, I just smiled and said, "Tell me more."

"Just think what a boon to DX this would be," he said seriously. "Of course, the ARRL would have to get some new stickers for the awards, but that's no big deal. Just look at these nautical maps that Harvey got at work that show where each offshore drilling platform is located," he said as he unfurled a large map of the North Atlantic.

"Wow," I said in veiled sarcasm, "it would only take 2307 countries to get on the Honor Roll under your new plan."

"Yeah, the Honor Roll would really mean something then. Also, just think of all the new DXpedition possibilities this would open up," Elmer quipped.

"Well," I said, "maybe you should write up your ideas in a formal proposal and send them in to the Awards Committee at the League. They're always looking for new ideas from League members."

"Oh, we plan to as soon as possible, " he explained as he rolled up his maps to leave.

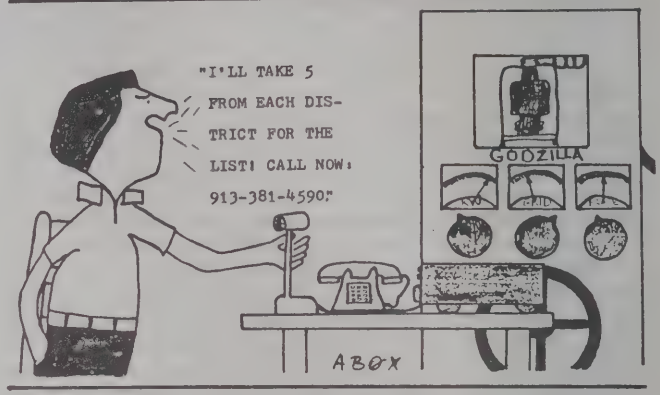
As WDØSRI drove away I said, tongue in cheek, "Hope Don Search likes your idea to save DXCC!"

Later that evening as I listened to idle chatter on our 2 meter DX net frequency, I tried to imagine what it might sound like if WDØSRI's proposal was adopted. "Yeah, I worked Exxon #397 today on 20 CW...Texaco #121 is supposed to get on for the contest...Phillips #269 has jut put up a new 160 antenna..."

Naw, I don't have that good of an imagination!

(ABØX)

WDØSRI DEMONSTRATES THE PROPER TECHNIQUE FOR TAKING A LIST



A NEW SET

Thorsten Balk, H5AI

Shopping by Groucho. Site: A city electronic (ham) store.

DXer: "Good Morning."

Seller: (Smiling) "A good spending, err, morning!"

DXer: "I want to buy a receiver."

Seller: "Stereo, HI-FI?

DXer: "No, I like shortwave."

Seller: "Well, isn't it HI-FI you want? See this set?- Medium wave and FM stereo."

DXer: "No, shortwave, DX!"

Seller: "So? Hm, DX, Hm. Stereo 30 watts left and right in the middle..."

DXer: "No, shortwave, DX, with SSB, or at least a BFO, lots of knobs to fiddle with and..."

Seller: "Right, yes, see this Nikazuki there and even

with longwave that's very good, and long is much better, and quadro! With lots of dynamic and roller coasters in orange, lots of zoom an umf..."

DXer: "No, No! A shortwave radio to pull in Radio VOA and Moscow and the Andes and so on."

Seller: (A spy! Oh my) "Yes, of course Mr. Spy."

DXer: "My name is Ernie, Ernie Bengelbrecht!"

Seller: "Right! Mr. Spybrecht. DX, naturally, all right (whispering) with headphones? Yes? Sire?

DXer: "Yes, headphones too, my grandmother sleeps next door and I..."

Seller: "Of course Mr. Spybrecht. By the way, how's Mr. Grobatshow? (Grandmother my foot!)

DXer: "My name is Bengelbrecht, Ernie, just say Ernie. How much is that Black Box?"

Seller: (Oh my, a real professional) "Yes, Mr. Spynie, this set is xxx.xx. The real choice for a professional, small, low in power, dimable readout and (hee hee) not cheap. A real thing for spy - err DXers with chrome knobs and GEO (or was that UFO?). A steal, a marvel of technology. (Softened voice) Comes from an Eastblock Country Mr. Spybrecht. Yes, Japan is east from here isn't it? And all transistors lubricated and the bass range is..."

DXer: "Well, the price? My budget, you know."

Seller: (These Eastblock spies are a drag, Americans for instance have...) "Yes, Mr. DXspy, here is a slow foot trouble box with built-in telescoping antenna, and UFO and backtwist knuckle knobs and comes with real DX odor and 110 volt 300 amp Russian plug with Chinese ledged and fast spyhide cowbox for storage and shipment and..."

DXer: (Shrill voice now) "How much is this one! That looks good. My, my. All bands, BFO, antenna built-in digital readout, mains and battery. Nice, nice. (Drooling) Yes, how much is it? Please, please.

Seller: "Yeah! American technology works all the time! A marvel, a goldbrick, a triumph of moon going semi (or was that sumi?) Conductors, a world zapper..

DXer: "Yeah, yeah, how much? Please, please! (Pant, pant, his eyes bulging a lot by this time, BP 160 to 110 km/h, breathing rapidly)

Seller: (These x@#@ spies) "Yes, and it's guaranteed until you unpack it, yes siree, fully functional (except all working parts, of course!). We are selling it for xxx.xx but you can have it for a special price, only xxxx.xx and the hand of your daughter (I'll just threw that in) with a set of low volts flatmaker batteries and our best intentions not to take it back!"

DXer: "Yes, yes, (still drooling, but slowing down) well (pant) I've got to sell my grandmother and eat dry distelnut all year, but what the heck! Give it to me, will ya! Now, yes, yes!

Seller: (Whata rip off) "Yes, Mr. Gromitskow, err, Mr. Spyling, sure, these soundlock xxx.xx (in US dollars) headphones too? For safe, err, silent listening and..."

DXer: "Yes, yes, all of it, give it to me! Now I can hear Schlarkowskyland, Hawaii, Canada and even Bophutatswana in both sidebands, in full bands, all bands, the world is mine, now DX, long life the flatmakers, it's all mine and FM, yes (pant, pant)."

Seller: "Yes, Mr. Spyunecht, of course! These sets are the best, yes siree (xxxx.xx in sub-dollars makes another week on martinis, or a new carburetor or at least a turkey sandwich). You'll even get the instruction leaflet for free in 16 languages, even in Taiwanese, the home of these marvels. (Who knows what language he'll prefer.) Shall I wrap it up, Mr. Sniffer?"

DXer: "My name is Spybrecht, Ernie! Call me DX Fox."

Seller: "Yes Mr. Spox, here your are, I'll just take this padding..."

DXer: "No, no, - no padding, I'll hand carry it home. Yes, yes, headphones and all. The world is mine. DX! Long life my wire! I've made it. The all band!"

Seller: "Yup, of course you have. (These spys are all the same.) Sure! The real thing, you'll even get the local FM service with it, Mr. Spuck. Last time we unpacked the batch this was the only...I mean the best work one, and good TX Mr. Shpuck, have fun with your DFO in stereo." (Smiling and relaxed now.)

DXer: "Yeah! Thanks a heap Mr. Spybrecht, this is the RX of the year...VOA, India, English, French, Mongolian, all these fine dialex, all mine, oh, thank you, thank you Mr. Spybrecht, (kissing his hand) also for these nice headphone."

Seller: "Yeah, yeah, Mr. Kremspy (hiding behind the counter) nice DXing now, you hear! No funny games, bye Mr. Spyspeck!"

DXer: "Thanx Mr. Spyshop, bye now."

Seller: "Bye." (Pant, puff!)

DXer: (Waltzing home) "This is it, (kissing his set) DX, the world now, all mine! With my fingertips (kissing his fingertips) long be my wire!"
(Waltzing on) END (H5AI)

TIRED DX
or CHASED BY DX
or HONOR ROLLER *(VE3BMV)*

KH6BZF PROPAGATION REPORT

Lee Wical, 45-601 Luluku Rd; CRT #44-25, Kane'Ohe, HI 96744

The first diagram shows the value of solar flux (top curve) and SSN - sunspot number (bottom curve). The Y axis and scale is the same for both. The X axis is calibrated in days of the month.

The second diagram shows variation of the Alpha Index for each day - an area limited by two curves.

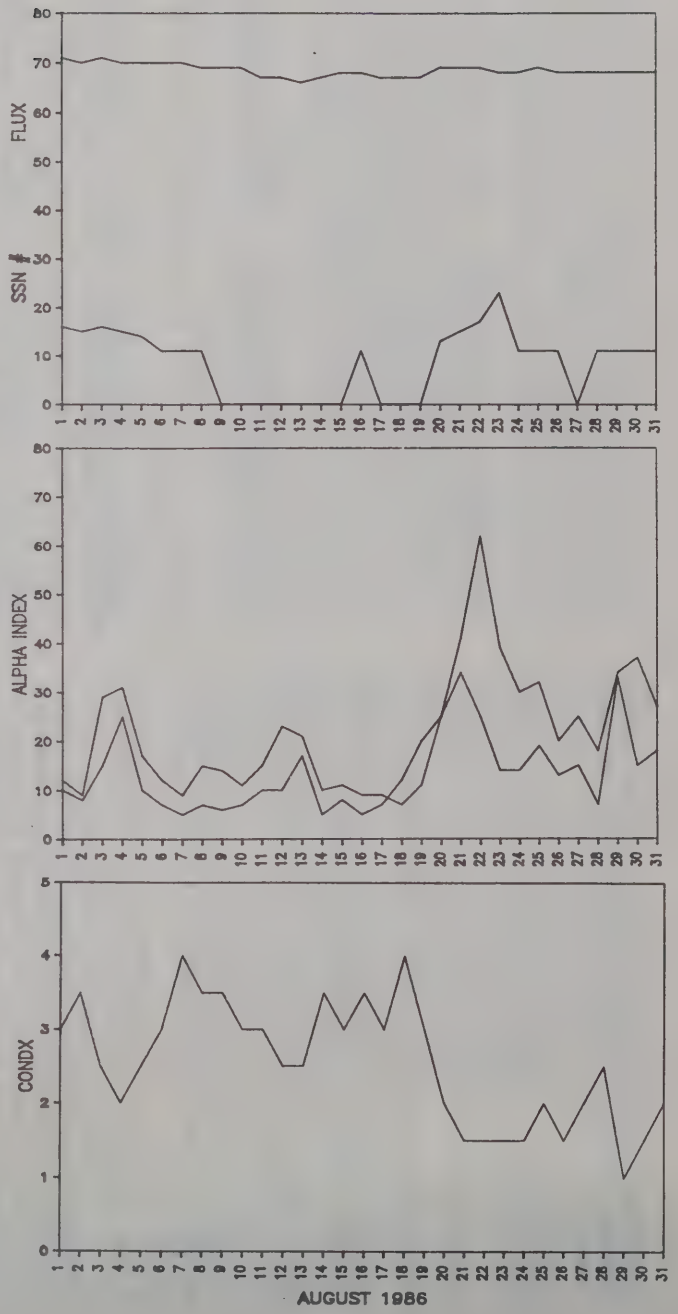
The third diagram shows the propagation quality (CONDX), where the scale is: 5 = Above Normal, 4 = High Normal, 3 = Low Normal, 2 = Below Normal, 1 = Disturbed.

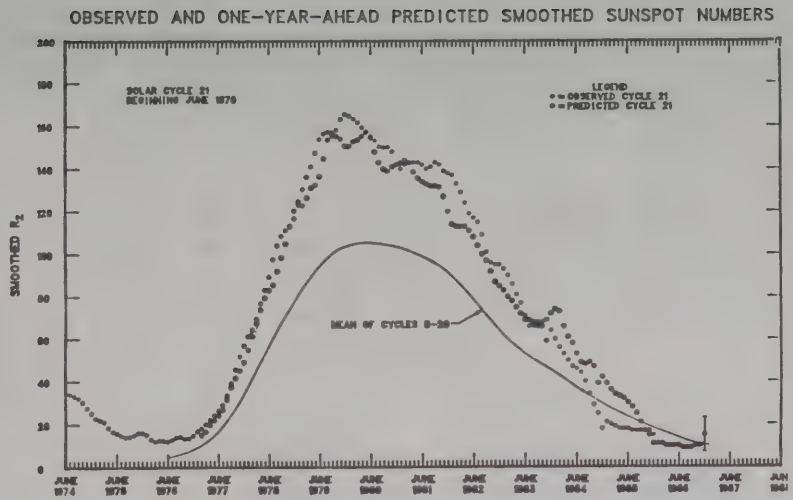
The Geomagnetic Field Level scale reads as follows: 5 = Very Quiet, 4 = Quiet, 3 = Unsettled, 2 = Active, 1 = Minor Storm, 0 = Major Storm.

To make your own forecast look at the diagrams and tables for values 28 and 56 days ago, check the WWV transmissions (18 minutes after the hour) for current values and make your own accurate predictions.

Statistical information is compiled by KH6BZF and processed on a computer by VE3BMV/W2.

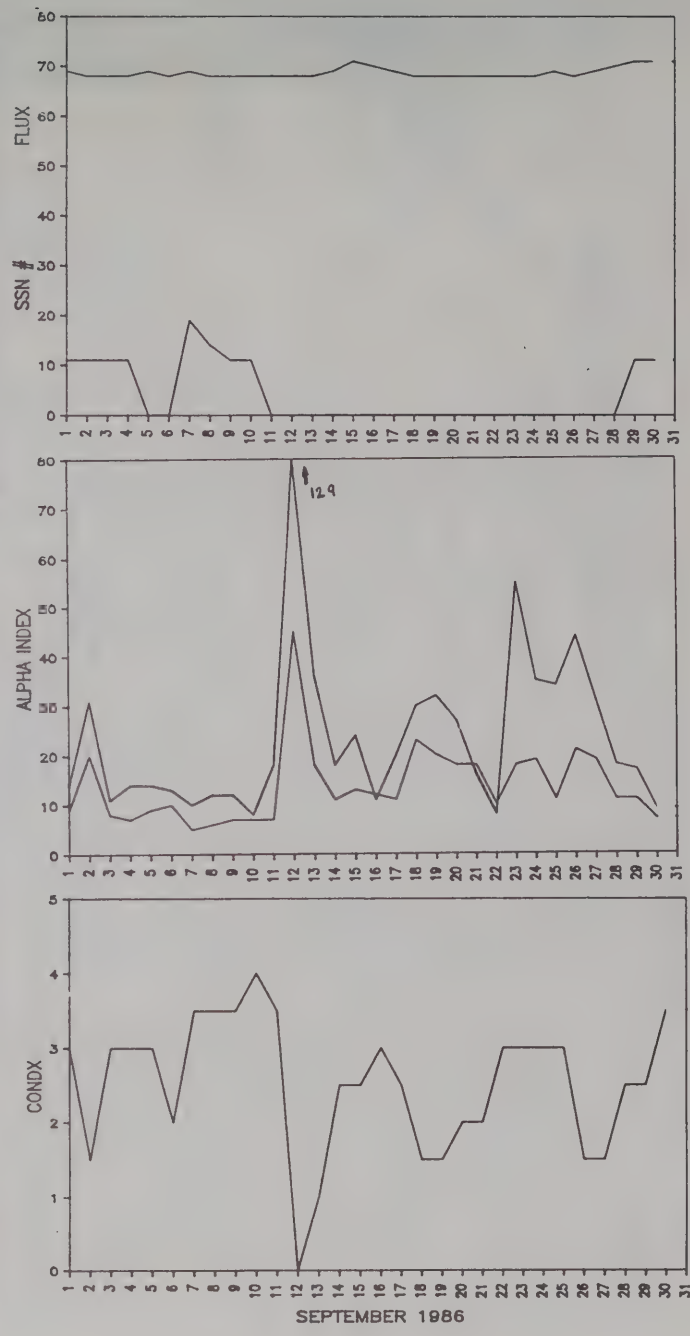
1986 AUG	CNDX	SO FLUX	AR LEVEL	SSN#	GEOM.L FM	GEOM.L TO	ALPHA FROM	ALPHA TO	K	NOTES
1	3.0	71	VY LOW	16	3	3	10	12	2	RGN4741(06)N09;E10
2	3.5	70	|	15	4	4	8	9	1	RGN4741(05)N09;W05
3	2.5	71	|	16	3	2	15	29	2	RGN4741(06)N09;W18
4	2.0	70	V	15	3	1	25	31	3	RGN4741(05)N09;W31
5	2.5	70		14	3	4	10	17	3	RGN4741(04)N09;W44
6	3.0	70		11	3	4	7	12	1	RGN4741(01)N09;W59
7	4.0	70		11	4	4	5	9	1	RGN4741(01)N09;W73
8	3.5	69		11	4	4	7	15	2	RGN4741(01)N09;W86
9	3.5	69		0	3	3	6	14	2	RGN4741(01)N09;OVER TO WEST LIMB
10	3.0	69		0	4	4	7	11	2	NO SUNSPOTS
11	3.0	67		0	4	1	10	15	2	NO SUNSPOTS
12	2.5	67		0	4	3	10	23	2	NO SUNSPOTS
13	2.5	66		0	4	2	17	21	3	NO SUNSPOTS, K=4 @0300-1800
14	3.5	67		0	4	3	5	10	3	NO SUNSPOTS
15	3.0	68		0	4	3	8	11	2	NO SUNSPOTS, DISS FILAMENTS
16	3.5	68		11	5	4	5	9	1	RGN4742(01)N02;E14
17	3.0	67		0	4	3	7	9	2	NO SUNSPOTS
18	4.0	67		0	4	4	12	7	1	NO SUNSPOTS
19	3.0	67		0	4	4	20	11	3	NO SUNSPOTS
20	2.0	69		13	4	0	25	25	4	RGN4743(03)S11;E28
21	1.5	69		15	4	0	34	41	4	RGN4743(05)S11;E14
22	1.5	69		17	4	0	25	62	3	RGN4743(07)S11;E01
23	1.5	68		23	4	0	14	39	4	RGN4743(01)S11;W14; RGN4744(02)N05;E72
24	1.5	68		11	3	0	14	30	3	RGN4743(00)S11;W27; RGN4744(01)N05;E60
25	2.0	69		11	1	4	19	32	2	RGN4744(01)N05;E47
26	1.5	68		11	4	3	13	20	2	RGN4744(01)N05;E33
27	2.0	68		0	4	3	15	25	3	RGN4744(00)N05;E20, SPOTS DISSAPEARED
28	2.5	68		11	4	3	7	18	2	RGN4744(01)N05;E06
29	1.0	68		11	3	1	33	34	2	RGN4744(01)N05;W07
30	1.5	68		11	3	1	15	37	1	RGN4744(01)N05;W20
31	2.0	68		11	2	4	18	27	0	RGN4744(01)N05;W34





Courtesy of SEL/SESC, Boulder,Colo.

1986 SEPT	CNDX	SOLAR FLUX	SOLAR LEVEL	SSN#	GEOM.L FM	GEOM.L TO	ALPHA FROM	ALPHA TO	K	NOTES
1	3.0	69	VY LOW	11	3	4	9	14	1	RGN4744(01)NO5;W47
2	1.5	68	|	11	4	1	20	31	1	RGN4744(01)NO5;W61
3	3.0	68	|	11	4	3	8	11	2	RGN4744(01)NO5;W74
4	3.0	68	V	11	2	4	7	14	2	RGN4744(01)NO5;W88
5	3.0	69		0	4	4	9	14	2	RGN4744 ROTATED OVER TO W LIMB @0107Z
6	2.0	68		0	1	4	10	13	2	RGN4745(00) NEW REGION, AURORA
7	3.5	69		19	4	4	5	10	2	RGN4745(09)N28;E30
8	3.5	68		14	3	3	6	12	1	RGN4745(04)N28;E18
9	3.5	68		11	2	2	7	12	1	RGN4745(01)N28;E03
10	4.0	68		11	4	3	7	8	1	RGN4745(01)N28;W10
11	3.5	68		0	4	3	7	18	1	NO SUNSPOTS @1837z AURORA
12	.0	68		0	0	0	45	129	3	MAJOR AURORA, NO SUNSPOTS
13	1.0	68		0	0	0	18	36	3	Ak=29/72 FOR HIGH LATITUDES
14	2.5	69		0	3	3	11	18	2	NO SUNSPOTS
15	2.5	71		0	3	3	13	24	3	NO SUNSPOTS
16	3.0	70		0	2	2	12	11	1	NO SUNSPOTS
17	2.5	69		0	3	2	11	20	2	NO SUNSPOTS
18	1.5	68		0	1	3	23	30	3	NO SUNSPOTS
19	1.5	68		0	1	3	20	32	5	NO SUNSPOTS
20	2.0	68		0	3	2	18	27	2	NO SUNSPOTS
21	2.0	68		0	2	4	18	16	2	NO SUNSPOTS
22	3.0	68		0	2	2	10	8	2	NO SUNSPOTS
23	3.0	68		0	3	3	18	55	3	NO SUNSPOTS
24	3.0	68		0	3	3	19	35	1	NO SUNSPOTS
25	3.0	69		0	3	2	11	34	3	NO SUNSPOTS
26	1.5	68		0	1	3	21	44	3	NO SUNSPOTS, STORMY PERIODS K=5 @26/0000-090
27	1.5	69		0	3	1	19	31	3	NO SUNSPOTS, STORMY PERIODS K=5 @27/0600-120
28	2.5	70		0	2	3	11	18	2	NO SUNSPOTS
29	2.5	71		11	2	3	11	17	2	RGN4746(01)NO6;E74
30	3.5	71		11	4	4	7	9	3	RGN4746(01)NO6;E61



THOUGHTS FROM THE RAINBOW BAY:

Marriage is the process of finding out what sort of husband your wife.... would have preferred!!!

An amateur only observes three solar cycles (on the average) in his lifetime... Those of you seeing more than three are lucky... those less than three... well, 1959 was a great one...

President Reagan is going to take a drug/urine test... I'm waiting for someone to say: ..Well, there he goes again!!!

Have faith in propagation... it may start a trend!!!

Remember: the number of mistakes one makes... is limited to ones perception of the facts!!!

Remember: an optimist is a guy who hopes some day to catch his dream girl... napping!!!

Old maids count on fingers... while young girls count on legs!!!

When all else fails... EAT!!!

A Smith & Wesson... beats four Aces!!!

What this world is damned good plague... and a 5 cent beer!!!

An elephant is a mouse... built to government specifications!!!

You can not teach an old dog... dirty words!!!

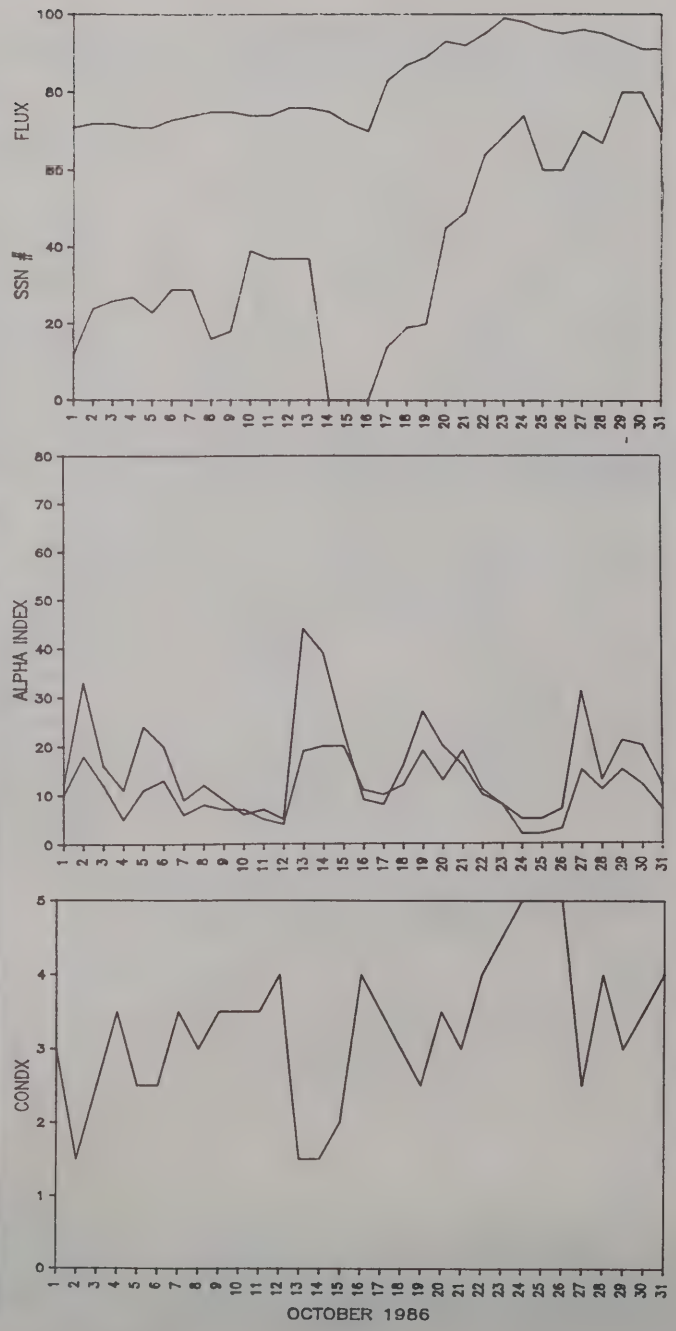
If at first you don't succeed... so much for hang-gliding!!!

You can always tell a prodigious propagation prognosticator... he is the person who is into himself... he always wears mirrored sunglasses... with the mirrors on the inside!!!

Always keep a record of data... it indicates you have been working!!!

GOOD DX, GOOD HUNTING! 73, Lee, KH6BZF

1986 OCT	CNDX	SOLAR FLUX	LEVEL	SSN#	GEOM.L FM	GEOM.L TO	ALPHA FROM	ALPHA TO	K	NOTES
1	3.0	71	VY LOW	12	4	3	10	12	3	RGN4746(02)NO7;E48
2	1.5	72	|	24	2	2	18	33	4	RGN4746(02)NO7;E33 RGN4747(02)N35;E48
3	2.5	72	|	26	2	1	12	16	1	RGN4746(02)NO8;E21 RGN4747(03)N35,E37
4	3.5	71	V	27	4	4	5	11	2	RGN4746(02)NO8;E08 RGN4747(04)N35,E21
5	2.5	71		23	3	4	11	24	2	RGN4746(01)NO7;WO1 RGN4747(02)N34,E13
6	2.5	73		29	3	1	13	20	2	RGN4746(00)NO7;W15 RGN4747(07)N34,WO5
7	3.5	74		29	4	4	6	9	1	RGN4747(08)N35;W18 RGN4748(01)S03,WO8
8	3.0	75		16	4	3	8	12	3	RGN4747(06)N34;W26
9	3.5	75		18	4	4	7	9	2	RGN4747(08)N35;W43
10	3.5	74		39	4	4	7	6	1	RGN4747(04)N35;W58 RGN4748(04) RGN4749(01)
11	3.5	74		37	4	4	5	7	2	RGN4747(03)N35;W70 RGN4748(01) RGN4749(03)
12	4.0	76		37	4	4	4	5	1	RGN4747(01)N35;W82 RGN4748(03) RGN4749(03)
13	1.5	76		37	4	2	19	44	4	RGN4747(01)N35;W98 RGN4748(03) RGN4749(03)
14	1.5	75		0	2	1	20	39	3	NO SUNSPOTS, ALL RGNS ROTATED OVER W LIMB
15	2.0	72		0	2	2	20	23	3	NO SUNSPOTS
16	4.0	70		0	2	2	11	9	2	NO SUNSPOTS
17	3.5	83		14	3	4	10	8	2	RGN4750(04)N21;E72 REVERSE POLARITY
18	3.0	87		19	4	3	12	16	3	RGN4750(11)N23;E61 RGN4751(00)
19	2.5	89		20	1	2	19	27	4	RGN4750(10)N21;E47
20	3.5	93		45	4	3	13	20	2	RGN4750(24)N23;E34 RGN4751(01)S24;E72 FLARES
21	3.0	92		49	3	4	19	16	2	RGN4750(26)N23;E21 RGN4751(03)S27;E58 NO PCA
22	4.0	95		64	2	2	11	10	2	RGN4750(25)N22;E08 RGN4751(04) RGN4752(05)
23	4.5	99		69	4	4	8	8	2	RGN4750(29)N22;WO5 RGN4751(05) RGN4752(05)
24	5.0	98		74	5	5	2	5	2	RGN4750(25)N24;W14 RGN4751(10) RGN4752(09) 53
25	5.0	96		60	5	5	2	5	1	RGN4750(10)N24;W25 RGN4751(04) RGN4752(04) 53
26	5.0	95		60	5	5	3	7	0	RGN4750(16)N24;W46 RGN4751(03) RGN4752(01) 53
27	2.5	96		70	4	2	15	31	4	RGN4750(09)N24;W49 RGN4751(05) 4752(03) 53 54
28	4.0	95		67	4	3	11	13	2	RGN4750(07)N24;W62 RGN4751(05) 4752(01) 53 54
29	3.0	93		80	3	4	15	21	3	RGN4750(03)N24;W76 RGN4751(03) 4752(07) 53 54
30	3.5	91		80	2	4	12	20	2	RGN4750(03)N24;W89 RGN4751(01) 4752(04) 53 54
31	4.0	91		70	4	3	7	12	2	RGN4751(01)S27;W72 RGN4752(04) 4753(03) 54 55



CONTEST RULES

FRANK ANZALONE, W1WY

CQ Magazine

14 Sherwood Road, Stamford, CT 06905

Calendar of Events

Nov.	**29-30**	**CQ WW DX CW Contest**
Dec.	5-7	ARRL 160 Meter Contest
Dec.	6-7	Telco. Pioneers QSO Party
Dec.	6-7	TOPS 3.5 MHz CW Contest
Dec.	13-14	ARRL 10 Meter Contest
Dec.	13-14	VU2 Garden City CW
Dec.	20-21	VU2 Garden City SSB
Dec.	20-21	EA DX CW Contest
Dec.	28	Canada Winter Contest
Jan.	1	AGCW Happy New Year Pty
Jn.1-	De.31	UBA SWL Competition
Jan.	3-4	"73" 10 Meter SSB Champ.
Jan.	10&11	"73" 15 & 20 SSB Champ.
Jan.	10-11	ARRL VHF Sweepstakes
Jan.	10-11	European YL-OM Contest
Jan.	17-18	"73" 160 M SSB Champ.
Jan.	17-18	AGCW-DL QRP CW Contest
Jan.	17-18	Crazy 8's HF, VHF, UHF
Jan.	**23-25**	**CQ WW 160 Meter CW Contest**
Jan.	24&25	"73" 40 & 75 SSB Champ.
Jn.31	-Fb.1	YL ISSB CW Contest
Feb.	7-8	QCWA CW QSO Party
Feb.	7-8	Vermont QSO Party
Feb.	14-15	Dutch "PAC" Contest
Feb.	14-16	YLRL YL-OM Phone Contest
Feb.	**20-22**	**CQ WW 160 M SSB Contest**
Feb.	21-22	ARRL DX CW Contest
Feb.	21-22	YL ISSB Phone Contest
Fb.28	-Mr.2	YLRL YL-OM CW Contest
Mar.	7-8	ARRL DX Phone Contest
Mar.	7-8	QCWA Phone QSO Party
Mar.	21-23	BARTG Spring RTTY
Mar.	**28-29**	**CQ WW WPX SSB Contest**

CQ WW DX CW Contest

0000Z Sat. to 2400Z Sun., Nov. 29–30

Just a reminder, as if you needed one, that the CW section of our WW DX Contest is coming up the last weekend of this month. The phone section of course is past history. Complete rules were published in the September issue. There are no changes from those used in previous years, as they are well established worldwide. The contest trophies list has been updated and well covered in the rules.

All logs, both Phone and CW, must be sent to the *CQ* office: *CQ* World-Wide DX Contest, 76 North Broadway, Hicksville, NY 11801 USA.

Deadline for logs for the Phone section is December 1st, and January 15th for the CW section coming up. Be sure to indicate Phone or CW on your envelope. This will avoid your log from being entered in the wrong section.

ARRL 160 Meter CW Contest

2200Z Fri. to 1600Z Sun, Dec. 5–7

This is the 17th year for this top-band activity. Exchanges will be between stateside and VE and DX stations. DX to DX contacts, however, are not permitted.

Classes: Single operator and multi-operator.

Exchange: RST and your ARRL section; country for DX and ITU regiog for maritime mobiles.

Scoring: Contacts between stations in ARRL sections count 2 points, with DX stations 5 points.

Multiplier: Determined by the number of ARRL sections plus VE8/VY1 (maximum of 74) and DX countries worked (for W/VE participants). (DX use ARRL sections only.)

Final Score: Total QSO points times the ARRL section and DX multiplier.

Awards: Certificates to the top-scoring single operator station in each section and DX country, and to the top-scoring multi-operator station in each ARRL division and continent.

The ARRL 160 band plan requires that W/VE stations transmit only in the 1800–1825 and 1830–1850 kHz segments, keeping the "DX Window" (1825–1830 kHz) clear for DX stations. They will indicate where they will be listening for cross-frequency contacts.

The usual grounds for disqualification—violation of rules, excessive duplicate contacts, etc.—will prevail.

Logs with more than 200 QSOs must include dupe sheets. A large SASE to the ARRL will get you the necessary forms to make log keeping easier.

All entries must be postmarked no later than January 4th and go to: ARRL Communications Dept., 160 Contest, 225 Main Street, Newington, CT 06111.

Telco. Pioneers QSO Party

1900Z Sat. to 0500Z Mon., Dec. 6–8

This is the 22nd annual QSO party of the Telephone Pioneers of America, and the 9th year it is sponsored by the John D. Burlie Chapter #89.

Members may be worked on each band and each mode if they are in different chapters, but only one contact is permitted between stations in the same chapter.

Exchange: QSO number and chapter number.

Scoring: One point per QSO on each band and each mode, and one multiplier for each different chapter worked. There are 100 TPA and 15 USTPA chapters.

Frequencies: Tune up the band from the following. CW—1800, 3555, 7028, 14055, 21055, 28055, 5010 MHz. Novice—3725, 7125, 21125, 28125. RTTY—3630, 7100, 14100, 21100, 28100. Phone—1870, 3815, 3915, 7255, 14265, 21355, 28685, 5010, 144, 220.10 MHz. Contacts via simplex or repeater are valid.

Awards: There is a wide selection of certificates for Life Members, Active Members, and Pioneers. Chapters in Canada have an awards program, and also the Burlie Chapter #89 is offering awards.

It is suggested that members who have not received this announcement from their chapters write to Ted Phelps for additional detailed information.

Mailing deadline for all entries is January 15th to: Ted Phelps, W8TP, c/o John D. burlie chapter #89, Telephone Pioneers of America, 6200 East Broad Street, Columbus, OH 43213.

ARRL 10 Meter Contest

0000Z Sat. to 2400Z Sun., Dec. 13–14

This is the 14th annual 10 Meter Contest organized by the ARRL.

It's a worldwide activity in which DX stations are permitted to work other DX stations. You are not limited to working W/K's and VE's only.

The same station may be worked once on phone and again on CW; no cross-mode, however. A maximum of 36 hours operating time is permitted out of the 48-hour contest period for all stations.

Categories: Single operator, mixed mode, phone only or CW only. Multi-operator mixed mode only.

Exchange: W/VE stations (including KH6 and KL7) send RS(T) and state or province. DX stations (including KH2, KP4, etc.) send RS(T) and QSO number starting with 001. Maritime mobiles send RS(T) and ITU region. Novice and Tech. stations must identify */N* or */T*.

Scoring: Phone QSOs are worth 2 points, CW 4 points, and Novice 8 points.

Multiplier: Fifty U.S. states, VE call areas, DX countries, and ITU regions.

Final Score: Total QSO points times the state, province, DX country, and ITU region multiplier.

Awards: Certificates to the top single operator in each category for each ARRL section and DX country, and to the top multi-operator station in each ARRL division and each continent.

Indicate the multiplier only the first time it is worked. Dupe sheets are required for logs with 500 or more QSO's. The usual disqualification criteria will be observed. A large SASE will get you log and instruction forms. Mailing deadline for all entries is January 18th to: ARRL Communications Dept., 10 Meter Contest, 225 Main Street, Newington, CT 06111.

TOPS Activity Contest 3.5 MHz CW

1800Z Sat. to 1800Z Sun., Dec. 6–7

TOPS is an international club for CW enthusiasts founded in Great Britain in 1946. Their objective is to encourage CW operation on the top bands.

Classes: Single operator, multi-operator, and QRP (5 watts or less input).

Single operator stations must take one break of 7 hours during the contest period; multi-operators can operate the full 24 hours.

Exchange: RST plus a three-figure QSO number starting with 001. TOPS members will also include their membership number.

Scoring: QSO's within own country, 1 point, in own continent 2 points, with other continents 6 points. Work a TOPS member and get 2 bonus points (members get 3 points).

Each call area in W, VE, VK, PY, U, and JA will count as a separate country for scoring. The multiplier is determined by prefixes worked (same as *CQ* WPX Contest).

Final Score: Total QSO points times the total number of prefixes worked.

Frequencies: Operation will be between 3500–3585 MHz, with the lowest 12 kHz reserved for out-of-continent DX contacts only. (When sending CQ send TAC, not Test.)

Awards: At least 15 certificates will be awarded based on the top scores in each class.

Logs must be received no later than January 31st and go to: Bertil Arting, SM3VE, Bergesvegen 26, S-823 00 Kilafors, Sweden.

VU2 Garden City Contest

CW: Dec. 13–14 Phone: Dec. 20–21
1200Z Saturday to 1200Z Sunday

It's the world working the VU2's on all five bands, 10 through 80 meters. Only single operator class. The VU2's have their own classification, Grades 1 and 2, but it has no bearing on the scoring.

Exchange: RS(T) and the usual QSO number starting with 001.

Scoring: VU2's earn 1 point for Asian contacts (including India); 2 points for Europe, Africa, and Australia; and 3 points for North and South America.

DX stations work VU2 stations only. Asian stations earn 1 point per contact; Europe, Africa, and Australia earn 2 points; and North and South America earn 3 points.

There is no multiplier. Just add the QSO points from each band for your final score. The same station may be worked once on each band for QSO credit.

Awards: All contestants submitting valid logs will receive certificates of participation. Winning certificates go to the three top scorers in each group and each class. *(Not clear of the grouping of DX stations.—ed.)*

All entries must be postmarked no later than January 15th 1987 and go to: Garden City Contest, Bangalore Amateur Radio Club, P.O. Box 5053, Bangalore 560001, India.

EA DX CW Contest

1600Z Sat. to 1600Z Sun., Dec. 20–21

The format of this activity has been changed from that used last year. It is still the world working the Espanoles, but the multiplier has been expanded to EA provinces.

Only contacts with EA stations are valid. The same station may be worked on each band, 10 through 160 meters.

Classes: Single operator and multi-operator, single transmitter.

Exchange: RST plus a three-figure QSO number. EA stations will include their province ID.

Scoring: For Europeans, 1 point for each EA contact. DX stations earn 3 points per QSO.

Multiplier: Each EA province worked on each band.

Final Score: Total QSO points from all bands times the sum of the multiplier from each band.

Spanish Provinces: *EA1*—AV, BU, C, LE, LO, LU, O, OR, P, PO, S, SA, SG, SO, VA, ZA. *EA2*—BI, HU, NA, SS, TE, VI, Z. *EA3*—B, GE, L, T. *EA4*—BA, CC, CR, CU, GU, M, TO. *EA5*—A, AB, CS, MU, V. *EA6*—PM. *EA7*—AL, CA, CO, GR, H, J, MA, SE. *EA8*—GC, TF. *EA9*—CE, ML.

Awards: Medals and certificates to the worldwide winner and the winner of each continent. Certificates to the winner in each DXCC and WAE country.

A separate log sheet is requested for each band, a summary sheet showing the scoring and other essential information, and the usual signed declaration.

Mailing deadline for logs is January 30, 1987, and they go to: U.R.E. CW Contest, P.O. Box 220, 28080 Madrid, Spain.

Canada Winter Contest

0000Z to 2400Z Sun., Dec. 28

Sponsored by the Canadian Amateur Radio Federation, this year's contest has a new set of rules. Activity is not confined to Canada only; everybody works everybody.

Use all seven bands, 1.8 through 50 MHz, both on phone and on CW. The same station can be worked on each band and each mode for QSO and multi-

plier credit.

Classes: Single operator, single and all band, single and mixed mode. Multi-operator, single and multi-transmitter, all band only.

Exchange: RS(T), and QSO number and province, territory, US state, or country.

Points: Canadian contacts are worth 10 points, contacts outside Canada 4 points, and 20 bonus points for each official station using the VCA or TCA suffix.

Multiplier: Each Canadian area (13) and each band and each mode (14) worked, possible total of 182. *(Suggest you send an SASE to VE6VW for sample log forms. —ed.)*

Frequencies: 1825/75, 3525/3775, 7025/70/7155, 14025/14150, 21025/21250, 28025/28500, 50040/50125 kHz.

Awards: Certificates to top scores in each class in each Canadian area, US call area, and each DX country.

Mail logs within 30 days of end of contest to: Norm Waltho, VE6VW, Box 1890, Morinville, Alberta, Canada T0G 1P0.

AGCW-DL Happy New Year Party

0900Z to 1200Z January 1

This seems to be a European activity only, but will report it here for your information. As the club's name implies, it's a CW affair, single operator only.

Classes: (1) Maximum input of 500 watts. (2) 100 watts. (3) 10 watts. (4) SWL. (Both calls must be reported.)

Exchange: RST plus QSO number. AGCW members will include their membership number.

Scoring: One point per QSO multiplied by the number of AGCW members contacted on each band.

Frequency: Three bands only, 3510–3560, 7010–7040, 14010–14100 kHz.

Send your report by January 31st to: Fritz Bach Jun., DK1OU, Eichendorffstrasse 15, D-4787 Gesenke, West Germany.

U.B.A. SWL Competition

Jan. 1 to Dec. 31, 1987

We often hear from SWL's complaining that very little coverage is given to their hobby. This one should keep them busy for the whole of 1987.

There are four categories: Single operator, phone, CW and RTTY, and all modes for clubs and multi-operator.

Use all 5 bands, 3.5–28 MHz.

There will be certificates and trophies for winners in all categories and areas.

The U.B.A. requires that you use their special log forms. Your requests for more detailed information and log forms should be directed to the Contest Manager, Marc Domen. Include 3 IRC's if in Europe, 4 IRC's for all other areas.

Contest Manager: Marc Domen, ONL 6945, Gebr. Blommestraat 14, Borgerhout, B-2200 Antwerpen, Belgium.

"73" World SSB Championship Contests

A series of six single band contests has been organized by *73 Magazine* to determine the SSB World Champion on each band, 10 through 160 meters.

Rules are the same for each one, and since they are all scheduled for the month of January, we will treat them as a single entry.

10 Meters (48 hours)
0000Z Sat. to 2400Z Sun., Jan. 3–4
15 Meters (24 hours)
0000Z to 2400Z Sat., Jan. 10
20 Meters (24 hours)
0000Z to 2400Z Sun., Jan. 11
160 Meters (48 hours)
0000Z Sat. to 2400Z Sun., Jan. 17–18
40 Meters (24 hours)
0000Z to 2400Z Sat., Jan. 24
75 Meters (24 hours)
0000Z to 2400Z Sun., Jan. 25

Classes: Both single and multi-operator, single transmitter. Stations may operate the full contest period regardless of their classification.

Exchange: RS report and state, province, or territory for the 48 US states and 13 Canadian areas. RS and country for DX stations, including Alaska and Hawaii.

Points: Contacts within own continent, 5 points. Outside own continent, 10 points.

Multiplier: One for each US state, Canadian area, and DXCC country worked (excluding the US and Canada).

Final Score: Total QSO points times the multiplier points.

Awards: Plaques to the World Champion winner on each band (minimum of 500 contacts). Certificates in each class in each US state, Canadian area, and ARRL DXCC country (minimum 100 contacts).

DX Windows: 7.08–7.09, 3.790–3.805, 1.825–1.830, 1.850–1.855, 1.907–1.913 MHz. These frequencies are reserved for split-frequency operation only. DX stations may transmit in the Window but must receive outside the Window frequencies. W/VE's are not permitted to transmit in the Window. *(A bold step. It will be interesting to see how it is observed.—ed.)*

Failure to comply with the DX Window rule could result in disqualification. Taking credit for duplicate contacts in excess of 3% of the total made can also mean disqualification. There is a stiff penalty of 100 QSO points for *each* duplicate contact for which credit has been claimed in the final score.

A summary sheet showing the scoring and other essential information, and a dupe sheet for entries with 100 or QSOs are required.

It is suggested that you send a large SASE to Bill Gosney, KE7C, the Contest Chairman, for official log forms.

Mail separate entries to the individual Contest Directors listed below, postmarked *no later* than February 18, 1987.

Contest Chairman and 160 Meters: Bill Gosney, KE7C, 2665 North Busby Road, Oak Harbor, WA 98277.

10 Meters: Linda Ingram, KG6MO, 44720 N. 11th St. East, Lancaster, CA 93535.

15 Meters: Gary Vest, NW5E, Star Route, Box 34, Holliday, TX 76366.

20 Meters: Chuck Ingram, WA6R, 44720 N. 11th St. East, Lancaster, CA 93535.

40 Meters: Dennis Younker, NE6I, 43261 6th St. East, Lancaster, CA 93535.

75 Meters: Ron Johnson, KC7PA, 68 South 300 West, Brigham City, UT 84302.

ARRL VHF Sweepstakes

1900Z Sat. to 0400Z Mon., Jan. 10–12

This is the 40th ARRL January VHF Sweepstakes. ARRL Headquarters recommends that you use the official log forms. It will make your log keeping and the scoring much easier. A large SASE to Newington will get you the necessary forms.

Complete rules will be found in the December issue of *QST*. They are a bit complicated, so look them over carefully.

European YL-OM "Midwinter" Contest

CW: Sat., Jan. 10 Phone: Sun., Jan. 11
0700Z to 1900Z each day

This contest is organized by four European YL Clubs—the English, Belgian, Dutch, and Italian.

Bands: All five bands, 3.5 through 29.7 MHz. Use sections according to IARU Region I recommendations.

Exchange: RS(T) plus QSO serial number and country. OM's start with 001; YL's start with 2001.

Points: Each QSO with a YL, 5 points. OM QSOs, 3 points. Stations may be worked once on each band.

Multiplier: Each DXCC country worked, counted once only, *not* once per band.

Final Score: Total QSO points from all bands times the DXCC countries worked.

Frequencies: CW—3510–3560, 7010–7040, 14025–14070, 21025–21070, 28025–28070. Phone—3600–3650, 3700–3775, 7050–7100, 14150–14250, 21200–21300, 28500–28700.

Awards: Certificates to the top YL and OM winners in each category in each country.

There is an SWL division. Score 5 points for each YL station heard. Multiplier same as above.

Use separate logs for CW and phone. Include a column for each new multiplier and QSO points. A summary sheet showing the scoring, a signed declaration that all rules and regulations have been observed, and your name and address in Block Letters are also required.

Mailing deadline to the contest manager is February 20th. They go to: D. Wildeboer, PA3CEB, Kettingweg 3, 8281 PN Genemuiden, The Netherlands.

1985 OK Contest Results

U.S.A.

W0WP	AB	20,440
K2SX	"	6,944
W3ARK	"	6,096
N4MM	"	396
WK4F	"	102
W5FO	14	14,906
K9CLO	"	5,150
AC8W	"	3,975

Announcing

The 1987 CQ World-Wide 160 Meter DX Contest

CW: January 23–25
Starts: 2200 GMT Fri.

SSB: February 20–22
Ends: 1600 GMT Sun.

With many new countries having opened the 160 meter band for amateur operation but only in certain segments of the band, it has become impossible to effectively come up with a band plan that would be acceptable to everybody. However, that is no reason why we should give up the present DX Window. It is still essential that 1825 to 1830 kHz be kept free of U.S. and Canadian activity. DX stations that are permitted to use that segment of the band should not use it for one frequency operation. They should specify (QSX) a listening frequency for split-frequency operation. It is also suggested that 1907 to 1912 kHz be considered a "Window" for DX operation in certain areas (Japan, etc.).

Violation of the above concept will be considered "unsportsmanlike conduct," rating possible disqualification.

There are no changes in the scoring used the past few years. The Canadian multiplier has been clarified, and a new list of plaques and sponsors has been added.

Classes: Both single and multi-operator.

Exchange: RS(T) and QTH. State for the U.S. and areas for Canada. It is not necessary for DX to spell out their QTH.

Scoring: Contacts with stations within own country, 2 points. Contacts with stations in other countries but in same continent, 5 points. Contacts with stations in other continents, 10 points.

Multiplier: Each U.S. state (48), Canadian area (13), and DX country. Canadian areas: VO1, VO2, VE1 N.B., VE1 N.S., VE1 P.E.I., VE2, VE3, VE4, VE5, VE6, VE7, VE8 N.W.T., VY Yukon. KH6 and KL7 are considered countries, and the U.S. and Canada are not counted as a multiplier. A Maritime Mobile counts as a multiplier in each World Region. The ARRL DXCC and the WAE country lists, and the WAC boundaries, are the standards.

Final Score: Total QSO points times the sum of the multiplier (U.S. states + VE areas + DX countries). Maritime Mobile scoring will be determined by their location.

Penalties: Three additional contacts will be deleted for each duplicate, false, or unverifiable contact removed from the log. A second multiplier will also be removed for each one lost by the above action.

Disqualification: Violation of the rules and regulations pertaining to amateur radio in the country of the contestant, or of the rules of the contest, unsportmanlike conduct, or taking credit for excessive duplicate contacts or multipliers will be deemed sufficient cause for disqualification.

Disqualified stations or operators may be barred from competing in future *CQ* contests for a period of up to three years.

Awards: Certificates to the top scorers in each class, in each U.S. state, Canadian area, and DX country. Also the following plaques.

Single Operator

CW	SSB
World—by K5AAD	World—by K5AAD
*U.S.A.—by N4PN	U.S.A.—by K4JRB
Europe—by K4SB	Europe—by K5UR
Asia—by WD4RCO	Oceania—Dixie DXers

Multi-Operator

World—by N4RJ World—S.E.DX Club

The above plaques may be won once only by the same station within a two-year period. Winner of the World Plaque will not also win a sub-area award. That award goes to the runner-up of that area.

Sample log and summary sheets may be obtained from *CQ* by sending a large SASE with sufficient postage to cover your request. You can make up your own, 40 contacts to the page, columns for time (GMT), exchange sent and received, multiplier, and QSO points. Indicate the multiplier only the first time it is worked.

Include a summary sheet with your entry showing the scoring and other essential information and a signed declaration that all rules and regulations have been observed. Mailing deadline for CW entries is February 28th, and March 31st for the SSB section.

Logs can be sent directly to the 160 Meter Contest Director, Donald McClenon, N4IN, 3075 Florida Avenue, Melbourne, FL 32904 USA. They can also be sent to *CQ* 160 Meter Contest, 76 North Broadway, Hicksville, NY 11801 USA. (Please indicate CW or SSB on the envelope.)

**The W0AW Memorial.*

FCC NEWS

BILL GRENFELL, W4GF

7216 Valleycrest Blvd., Annandale, VA 22003

ON JULY 2 THE ARRL FILED A PETITION REQUESTING THE IMMEDIATE OPENING OF THE 18.068 THROUGH 18.168 MHz BAND on the basis that "...these frequencies are apparently no longer in use in this country and should be open to radio amateurs." (ARRL Letter, 07/18/86) However, FCC has advised that there are operations remaining in the band which are expected to continue until 1989 (as is permissible under FCC rules), and that ARRL's request can't be granted.

THE ARRL QUOTES A PART OF FCC'S GENERAL DOCKET 86-285 NOTICE OF PROPOSED RULE MAKING AS PROOF THAT FEES WILL NOT BE CHARGED FOR AMATEUR LICENSES: "81. We note here that section 8(d) (1) of the Communications Act and the Conference Report language, by no means includes all of the services exempt from fees. This explicit statutory language was necessary to exempt specific users int he private radio services that otherwise be subject to charges. By its failure to establish a specific fee, the statutory Schedule of Charges exempts whole categories of radio services, such as Instructional Television Fixed Services and Amateur Radio..." (ARRL, 07/15/86).

REGARDING THE NOVICE AND EXTRA CLASS EXAMINATION QUESTION POOLS, ARRL ADVISES THAT THE NEW EXTRA QUESTIONS WERE PUT INTO USE STARTING WITH THE OCTOBER 1 SESSIONS and that it had filed six pages of suggested changes of the Novice question pool with FCC by the July 1, 1986 deadline. (ARRL Letter, 07/18/86)

THREE AMATEUR OPERATORS IN THE SOUTHERN NJ - PHILADELPHIA, PA AREA HAVE EACH BEEN FINED $1,000 FOR UNLICENSED OPERATION BETWEEN 26.165 AND 26.770 mhz. The charges for violation of the Communications Act were the result of an investigation by FCC's Philadelphia Office. "Notices of Apparent Liability to a Monetary Forfeiture in the amount of $1,000 each have been issued tot he following: Joseph W. Bosak (Advanced), N3DFD; Adrian J. Post (Technician), KA2YIN; and Walter Leddick Sr. (Technician), N3DXP." (QST 08/86. Westlink Report 07/25/86)

FCC'S PUBLIC NOTICE 5533 (07/01/86) CONCERNING RECIPROCAL OPERATING PROVIDES THAT THE OPERATOR PRIVILEGES OF AN ALIEN AMATEUR OPERATING IN THE UNITED STATES UNDER A PERMIT ISSUED BY FCC "...ARE THOSE AUTHORIZED BY THE OPERATOR'S OWN GOVERNMENT, BUT NOT TO EXCEED THOSE OF THE FCC AMATEUR EXTRA CLASS (see Section 97.7)" An unqualified statement in FCC NEWS four months ago unfortunately indicated that such operation in the U.S. under a U.S. permit would restrict an alien from the European area (Region 1) to the 144-146 MHz segment of our 144-148 MHz band. It should have indicated that the alien would be so restricted only if his country's regulations would not permit its licensees to use the 146-148 MHz segment of the band when located outside Region 1. In ITU Region 1 (Africa, Europe and Northern Asia) the world regulations provide only for a 144-146 MHz two meter Amateur band.

RECONSIDERATION OF ITS DISMISSED PETITION TO REQUIRE THE LABELING OF HOME ELECTRONIC EQUIPMENT RELATIVE TO THEIR SUSCEPTIBILITY TO RFI, HAS BEEN REQUESTED OF FCC BY THE ARRL. THE FCC "...Chief Engineer had stated in his dismissal that the Petition was premature as necessitating mandatory RF rejection standards. "The League's Petition for Reconsideration disputes this, stating that the labeling is independent of RF-susceptibility standards, and it would encourage voluntary compliance by manufacturers without adding any additional work burden on the Commission. "The labeling requirement would also serve to educate the consumer by suggesting that the consumer would contact the manufacturer for assistance in case of interference." (ARRL Letter)

ON JULY 5, 1986, FCC ADOPTED A REPORT AND ORDER WHICH TRANSFERS THE MAINTENANCE OF AMATEUR LICENSE EXAMINATION QUESTION POOLS FROM THE FCC TO THE VOLUNTEER EXAMINATION COORDINATORS. (PR DOCKET 85-196). At the time this was written, copies of the Order were not available. However, in the August, 1985 issue of QST, page 52, the proposal was described as follows: "VECs will be required to publish the question pools, which would contain at least 10 times the number of questions actually used on each test. VECs would also be required to publish the formula used to design each test (the number of questions from each subgroup in the pool that would be on the test)."

THE ELECTRONICS COMMUNICATIONS PRIVACY ACT REPORTED AS H.R. 4952 IN LAST MONTH'S FCC NEWS HAS NOW BEEN PASSED BY THE HOUSE AND SENT TO THE U.S. SENATE. "There is some interest on the Senate's part in further amending the bill..." "It appears that the bill no longer threatens ...radio amateurs (even if they are phone patching)..." (ARRL, 07/15/86)

THE POSSIBILITY OF "A REGION II HEMISPHERIC-WIDE AMATEUR RADIO LICENSE..." (WAS TO) "...BE DISCUSSED AT THE 17TH MEETING OF THE PERMANENT EXECUTIVE COMMITTEE OF THE INTER AMERICAN TELECOMMUNICATIONS CONFERENCE." The Conference was at Mexico City, July 21 - 25. (Westlink Report, 07/11/86). It is to be noted that the U.S.A. has nearly 50 reciprocal amateur operating arrangements with countries of South, Central and North America.

FCC'S JULY 1986 NOTICE OF "INTERNATIONAL AMATEUR RADIO ARRANGEMENTS" LISTS THE COUNTRIES WITH WHICH ARRANGEMENTS HAVE BEEN MADE FOR THE EXCHANGE OF THIRD-PARTY MESSAGES BETWEEN AMATEUR STATIONS AND FOR RECIPROCAL AMATEUR OPERATING PRIVILEGES. There appears to be no new arrangements since the December, 1985 Notice. However, in the reciprocity list, the territories and possessions of two countries are now included. They are: French; French Guyana, French Polynesia (Gambier, Marquesas, Society and Tubal Islands and Tuamotu Archipelago), Guadeloupe, Ile Amsterdam, Ile Saint Paul, Iles Crozet, Iles Kerguelen, Martinique, New Caledonia, Reunion, Saint Pierre and Miquelon, and Wallis and Fortuna Islands. United Kingdom; Bermuda, British Virgin Islands, Cayman Islands, Falkland Islands, Gibraltar, Hong Kong, Montserrat, Saint Helena, and Turks and Caicos Islands.

TWO PETITIONS FOR RECONSIDERATION OF IT'S APRIL 21, 1986 REPORT AND ORDER IN PR DOCKET 85-22 CONCERNING RULES FOR FREQUENCY COORDINATION OF REPEATERS WERE DISMISSED BY FCC BECAUSE THEY WERE FILED AFTER THE SPECIFIED JUNE 12, 1986 COMMENT DEADLINE. The proceeding amended the rules "...to clarify the relationship between coordinated and non-coordinated repeater and auxiliary amateur operation."

FCC ADOPTED A MEMORANDUM OPINION AND ORDER IN PR DOCKET 85-23 CLARIFYING THE WORDING AND ELIMINATING CONFUSION OF SEVERAL OF THE AMATEUR RADIO SERVICE RULES, EFFECTIVE 10/04/86. They are sections: 97.3(k) National Radio Quiet Zone; 97.3(dd) Coordinated station operation; 97.7(g) (8) and (9) (regarding use of the 902-928 MHz band; 97.61(c) Authorized emissions (Above 144.1 MHz); 97.67(i) Maximum transmitting power (in the 902-928 MHz band); 97.85(g) (to cross reference 97.3(dd)).

ON 08/07/86 THE FCC DENIED A REQUEST THAT IT'S "...Rules be clarified to specify that the permission given to participate in amateur radio communications by the station licensee to a disqualified third party be willful." In it's report of the denial, FCC stated: " Before the Commission can impose a sanction, the Communications Act requires a finding that the conduct was knowing, willful or repeated. There is no need to restate this in the individual operating rules."

BY ACTION ON 08/07/86 THE FCC MADE IT CLEAR THAT PULSE EMISSIONS BY AMATEUR STATIONS ARE PERMITTED IN THE 902-928 MHz BAND. Included was amendment of "...Section 97.67(i) of the rules to clarify that while no amateur station transmissions are permitted on 902-928 MHz within 150 miles of the White Sands Missile Range, reduced power transmissions (at 50 watts peak envelope output power) are permitted between 150 and 200 miles from the boundaries of White Sands Missile Range. "The FCC also amende Sections 97.7(g)(8) and (9) to clarify that secondary status bears no relation to the areas of prohibited operation for the 902-928 MHz band." These rules became effective 10/04/86.

ON 08/05/86 THE ARRL FILED A "REQUEST FOR IMPOSITION OF FORFEITURE AND OTHER RELIEF" WITH FCC ON BEHALF OF IT'S MEMBERS AGAINST THE PACIFIC GAS AND ELECTRIC CO. (PG&E) FOR REPEATED AND WILLFUL REFUSAL TO RECTIFY SERIOUS, HARMFUL INTERFERENCE TO THE OPERATION OF AMATEUR RADIO STATIONS WB6SXL AND W6VLE, ANDERSON, CA IN VIOLATION OF SECTION 15.25 OF THE COMMISSION'S RULES." This involves interference from two PG&E high voltage, "1920-vintage" power lines so severe that communications ont he amateur 160, 80 and 40 meter bands are impossible at all times and communications are impaired and often disrupted on the 20, 15 and 10 meter bands as well. The ARRL states that PG&E wrote to one of the complainants on January 17, 1986 telling him that PG&E would take no action to alleviate the interference.

SOME COMMENTS FILED IN THE PR DOCKET 86-161 PROPOSAL TO EXPAND PRIVILEGES AVAILABLE TO NOVICE OPERATORS OBJECT BECAUSE THE FILER INCORRECTLY BELIEVES IT PROPOSES A "NO-CODE" NOVICE LICENSE WHILE OTHERS OBJECT ON THE BASIS THAT IT SHOULD HAVE PROPOSED A "NO-CODE" NOVICE LICENSE! The comment deadline was 08/20/86.

THE ARRL HAS FILED COMMENTS REGARDING THE FCC PROPOSAL TO IMPOSE RADIATION LIMITS ON RADIO FREQUENCY (RF) LIGHTING DEVICES OPERATING BELOW 30 MHz." "Rf lighting is a new technology in which RF energy is used to produce light, apparently more efficiently than existing light bulbs." ARRL tests indicate that such bulbs with considerably lower interference levels that the maximum levels proposed by the Commission cause S1 to S7 interference levels using an indoor receiving antenna 3 feet from the RF bulb. "ARRL suggests that the Commission encourage the private sector to produce an adequate set of standards, and that the bulbs carry labels which would educate consumers about the potential of interference." (ARRL Letter, 08/15/86)

THE TWO PILOTS OF THE AROUND-THE-WORLD FLIGHT AIRCRAFT "VOYAGER" ARE JEANA YEAGER, KB6LQR AND DICK RUTAN, KB6LQS, BOTH NOVICE CLASS AMATEUR RADIO OPERATORS. The aircraft is designed to be the first airplane to fly around the world nonstop and unrefueled. It was scheduled to begin the flight on September 14. No amateur operation was expected on that flight. (ARRL Letter, 08/04/86)

CURRENTLY OPERATING ON A BUDGET OF $90 MILLION, THE FCC HAS TENTATIVELY DECIDED REQUEST $104 MILLION FOR FISCAL 1988. Its request for 96.4 million for fiscal 1987 is still pending in Congress. Contending that FCC has essentially eliminated its current deficit, Chairman Mark Fowler directed that the freeze on promotions at the Commission be lifted July 20. (ARRL Letter, 08/04/86)

A AMATEUR RADIO LICENSEE HAS BEEN CHARGED WITH ILLEGALLY OPERATING A SATELLITE UPLINK TRANSMITTER TO INTENTIONALLY INTERFERE WITH THE SATELLITE CABLE TELEVISION PROGRAMING OF HOME BOX OFFICE, INC. (HBO). The FCC determined that the April 27, 12:30 AM EST transmission was made by John R. MacDugall, KA4WJA. MacDugall identified himself only as "Captain Midnight". Concluding that the interfering signal must have been transmitted from a professional satellite uplink facility with more than a certain antenna size and transmitter power, and using a recognizable specific make and model character generator, FCC narrowed the possibilities to less than 12 licensed satellite uplink facilities. The Central Florida Teleport at Oscala Florida, was the only facility, out of 580 surveyed, with the proper combination of equipment and availability for use at the time and date of the interference. MacDougall was the operator on duty! In a plea bargaining agreement, MacDougall reportedly was fined $5,000 and was asked to surrender his Technician class license for the remainder of its term. (ARRL Letter, 08/04/86)

THE KOREAN MINISTRY OF COMMUNICATIONS HAS ADVISED FCC THAT THIRD PARTY COMMUNICATIONS FROM ATHLETES AND STAFF OF THE ASIAN COUNTRIES AT THE 1986 GAMES WOULD BE PERMITTED THROUGH KOREAN AMATEUR STATIONS 6K86AG AND HL86A ESTABLISHED BY THE COOPERATION OF THE KOREAN AMATEUR LEAGUE IN THE MAIN STADIUM AND AT THE VILLAGE FOR LODGING. The third party arrangement is for the period of September 6 through October 8, 1986.

THE ASSOCIATION OF RADIO READING SERVICES, WHICH HAD EARLIER REQUESTED A PIECE OF THE 220-225 MHz AMATEUR BAND FOR IT'S TRANSMISSIONS HAS NOW PETITIONED FCC TO REQUIRE PUBLIC FM BROADCAST STATIONS TO GRANT ACCESS TO THEIR SUBCARRIER SYSTEMS FOR THEIR RADIO READING SERVICES. This is likely to "stunt the impact of the earlier petition..." according to the ARRL legal counsel. The ARRL had filed comments in opposition to the petition for 220 MHz space. (Westlink Report, 08/22/86), ARRL Letter, 08/04/86)

"IN YET ANOTHER MEASURE DESIGNED TO CONSERVE OPERATING FUNDS, THE FCC WILL BE DELAYING FORMAL NEW RELEASES ON MATTERS ACTED UPON." Previously, press releases were issued within a day or so of its being made know. "Once this change goes into effect, formal news releases could follow the release of a news item by 10 days or more. "No implementation date has been announced." Westlink Report, 08/22/86)

IN DEFENSE OF IT'S ORDINANCE WHICH WOULD PREVENT JOHN THERNES, WM4T, FROM PUTTING UP A TOWER AND AMATEUR ANTENNA SYSTEM, THE CITY OF LAKESIDE PARK, KY HAS ATTACKED FCC'S PRB-1. PRB-1 expresses the Commission's decision favorable to amateur in regard to limited Federal preemption of antenna-tower regulation. In reporting on the Thernes case the ARRL's General Counsel advised that the Federal preemptive statement in PRB-1 provided the basis for the case being remended to the District Court by the Court of Appeals. In regard to the attack, the Counsel reported to the ARRL Executive Committee that this was to be expected, inasmuch as it is the only defense available to the city, and should not be a cause for undue alarm. (Westlink Report, 08/08/86), ARRL Executive Committee Minutes, 08/23/86).

IN GENERAL DOCKET 86-337, THE FCC HAS PROPOSED ESTABLISHING AN AUTOMATIC TRANSMITTER IDENTIFICATION SYSTEM (ATIS) SIGNAL ON ALL SATELLITE VIDEO UPLINKS AND ASKED FOR COMMENTS IN A NOTICE OF INQUIRY ON AN ATIS SYSTEM FOR ALL RADIO SERVICES AND RADIO TRANSMITTERS. "ATIS is a unique, unchangeable identifying number assigned to each transmitter at the time of manufacture, plus some correlation of the number to a data base identifying the licensee. This signature is automatically added to the unit's transmission and provides positive identification of each radiated signal." In its Notice of Inquiry, (released 08/19/86), FCC asks many questions such as : "In what services would ATIS be beneficial? Should it be imposed on all services? Could ATIS be mandatory in some services and voluntary in others? Would it be feasible to permit stations to ignore normal call sign requirements if those stations employed ATIS? Would this work in some services...but not in others?" ...and so forth! Comments are due by October 20, 1986, and the Commission noted in its inquiry it was willing to extend the comment period if requested. The ARRL Executive Committee has directed the ARRL Counsel to file comments opposing ATIS "...as inappropriate in the Amateur Radio Service." (ARRL Letter, 09/02/86)

THE SUPERIOR COURT OF CALIFORNIA, COUNTY OF SAN FRANCISCO, HAS RULED IN FAVOR OF A RADIO AMATEUR IN AN RFI CASE. Mary Matheny, KB6CLL, was sued by a neighbor for allegedly causing RFI. The court ruled that the state court lacks authority to regulate and control Amateur Radio operators, radio emissions and radio frequency interference, and that maintenance of a state court action which would permit the state court to regulate and control Amateur Radio operation and radio frequency interference is prohibited by federal law. The court stated "The Federal Communication Commission has the exclusive right and power to regulate, control and sanction amateur radio operations and radio frequency interference." The court then granted KB6CLL's request for a summary judgement. This case will be an important reference for amateurs facing similar legal actions. (ARRL Letter, 09/02/86) (W4GF)

4X4NJ:

Dear Yuri, it was great meeting you at Dayton. I wanted to write to you for some time about several items, but before I go into details, I want you to know how much I appreciate & value RADIOSPORTING magazine. It is the only publication devoted to those areas of endeavor within amateur radio that are dear to me. Namely 160 m, DXing and contesting. Keep up the good work!

On page 46 of May 1986 RADIOSPORTING you published a letter from Dave, N4SU. The P.S. to that letter says that "Like 4X4NJ, I no longer submit any CQ 160 m contest logs." I would like to set the record straight on this subject from my standpoint.

First, my disagreement with the CQ contest committee concerns only the CQ WW DX contest and not the 160 m CQ contest. I've always felt, and still do, that N4IN is doing a fine job handling the 160 m contest which I continue to look forward to entering every year as I've done almost continuously since about 1974 when we started getting special permission for top band operation (contests only).

Several years ago, the CQ Contest Committee recognized new all time record score for the 160 m single band section of the CQ WW by a station who was blatantly cheating.The call sign of the station is not important now, and I am purposely deleting it in order to stress important points concerning the mishandling of the matter by CQ. This station was heard by several prominent 160 m DXers faking QSOs. I one instance, the station being faked happened to tune across the frequency as the QSO was being "made" between the cheater and himself. In addition, he was using the "services" of another station heard actively relaying calls and reports (single operator operation?). Several DXers wrote to the CQ Contest Committee objecting to this as I did. Only, in my case, in order to bring home the point, I submitted both my CW and SSB logs as check logs, out of protest. I bothered to go through the logs and dupe them, and I worked out the total multipliers and QSO points which I indicated, but I specifically, refrained from calculating the final score and stressed that my logs are being submitted out of protest. My letter to the CQ Contest Committee was diplomatic. I mentioned I knew that they could not discover all improprieties, etc., and I suggested a means for diplomatically handling the matter by simply not relating to the all time records in the future. I've shown the letters I wrote to several amateurs who all agree that they were espectful, not unduly blaming the contest committee. What were the results, and what is the essence of my disagreement with them? First, they never replied to my letters. Granted, they have full authority to make decisions, but whatever they decided should have been explained to me in suitable reply to my letter. Instead, they chose to ignore my letter- a point proven by their action. Second, they actually went and calculated my score and considered my log to be a regularly submitted log - completely ignoring that it was submitted as a check log. Third, as if to add insult to injury, they bothered to send me certificates for placing significantly in the contests.

Possible conclusions to this action (and inaction) by the CQ Contest Committee include:

1. They condone cheating. At least they are not sufficiently concerned by well witnessed cases to do anything to correct the results.

2. They consider themselves above accepted courtesy of replying to letters.

3. They feel that they are empowered to change a check log into a regular log. This is worrisome since at times accomplished contesters don't really get into a contest, but submit the logs to help the judges. This usually results in a low score entry with check log submission. I feel that it is the right of a station to submit a check log and that the contest committee must respect this. Acting otherwise, the contest committee embarrasses accomplished contesters by publishing lower than usual scores by them.

In 1985 I entered the CQ WW using my alternate call, K7NJ/4X. This was done to allow the USSR stations to work me, since they usually have trouble if they work my regular call. I was hoping to surpass the all-time record held by the cheater, which I almost did - coming within a few percent of that score. However, "almost" is not enough and my score would have been insufficient to correct the distorted "all-time record." Needless to say, there was no point in submitting the log, certainly not as a check log(!).

I really miss the CQ WW which I had entered, almost religiously, as a 160 m, single band entry for ten years straight. Perhaps, I will enter again in the future, as a minimum, I suppose it will be only after someone else establishes a new all-time record. Possibly, I would resume my entry if I was able to know of significant changes in the membership of the CQ Contest Committee or their procedures. I could even envision entering the contest if they would properly apologize for their actions and misactions. Maybe, enough time will go by, and I will just decide to give it another try - I really don't know at this stage. I suppose what hurts the most, is the awareness that the greatest contest in amateur radio (that is I previously believed) is mismanaged and unfair.

On a more pleasant side, the 160 m DX information net is still functioning well. We are starting the third year of activity now. The net meets on Saturday at 1400 Z on 14339 kHz (+-QRM). I am usually net control since with beam pointed North West, I cover all of Western Europe, North America and the Caribbean. Hopefully, we'll be able to find some alternate net control station to cover the times when I'm away from home (so far it's only been while away overseas).

The last new country worked on top band was Thailand, HS0C operation, which makes 154 worked and 144 confirmed. WAZ is at 34 worked, and WAS is at 37 worked. It's interesting that the "auroral oval" shielding region in the North polar area shields stations West of a line running from Minnesota through Texas. I've worked all states East of that line, but to the West of it, I've only worked Oregon and Colorado. 73, Riki, 4X4NJ

Dear Riki,

Thank you for your letter and kind comments. It was also a real pleasure to meet you and other 4X4 operators at Dayton.

First I though I knew who are you talking about. Then when I looked at the all time records and have seen that in 1985 the valid record was made in 1983, I realized that perhaps we are talking about another case.

At the bottom of the previous cycle, I managed to hold the 160 m record for one year. The next year we met with the previous record holder and we fought the battle. I lost by few multipliers that my opponent collected by checking into the Caribbean WX net on Sunday morning, when I could not hear the stations. After the contest was over I heard at Dayton that my opponent was using "HF repeater" - other station(s) that were relaying the calls and reports on another band (40m?). Then it struck me that I have noticed a peculiar delay in responses of my opponent after a very weak station called him. I did not have any proof of this really happening and I assumed that everybody operates according to the rules and regulations. That record stood there for about 8 years. My score would have been the record score as I came second.

If the case you are describing relates to the present valid record, then I am behind you. CQ Contest Committee should do something about it. It is never too late to verify some of the allegations and take an action. I had similar experiences with communication with CQ and Contest Committee. Few times we made an agreement and we stuck to our side, but somehow things "get lost" on their side. I was a member of the CQ Contest Committee for a few years, but problems with getting the logs on time, my workload and lack of communication prompted me to resign rather than to do a "half job."

I think that problems like this should be resolved in order to preserve the

publicized so other people know and perhaps a little bit of publicity pressure might help to keep things in line. We should throw our support behind those who do a good job, rather than support "injustice."

I had disagreement with ARRL DX Contest administration (W1XX) about my disqualification because of errors in my log (better to say discrepancy between the my and other station's logs). This included errors in the exchange which was treated as cheating and included in the calculation for the percentage of errors. While the rules do not state that errors can be included in the disqualification count, this was never clarified or explained. Correspondence with ARRL resolved nothing. I have never entered that contest again. I have been extremely careful with my logging since and at the times I keep a tape recorder running while I operate. But how many times it happened that station comes on our frequency signing his call, giving a report and disappearing. Timing is perfect, but later we find that there is another station on our frequency and happens to be synchronized with us. Only they know who they worked. We usually find out when the same station calls us again and says we didn't work, while we know we did. Things could get quite complicated.

The record scores should be scrutinized very closely, because they could be there for a while to stay and they better be good. I don't blame you for what you did. One should do what he thinks is right. Sorry that you had to have those experiences, I also value the CQ WW and WPX contests as tops. With our WRC contest we will try to avoid similar problems.

Word is out that in the USSR a huge number of stations was disqualified by the Central Radioclub and licensing authorities for running excessive power, operating out of the assigned frequencies, operating from all over the city using one call as a multi operator station, etc. Some stations lost their licenses too. Members of the CRC visited number of stations during the contest and uncovered those problems. One can get away "with murder" for a while, but sooner or later the truth comes out and the embarrassment is not worth it. Lets keep it clean and tape recorders running. 73 de Yuri

VE7BS:

Yuri: On your comment about the need for a preamp ahead of newer rigs, an exception is the Ten-Tec Corsair II. It has sensitivity of about .25 microvolt on 160 as well as on the higher bands.

I find I can hear atmospheric noise when switching to the short (250 ft) beverage antenna on 160 even during the day. I use the "RF gain" control (which is actually IF gain) well back all the time for best S/N ratio. There is a front panel switch to disable the RF preamp and replace it with an attenuator; once in a while I have used the switch when a big gun fires up during a contest.

Before buying the Corsair II I had an Omni C, which had sensitivity of about 2 microvolts on 160. Adequate for anyone with strong local electrical noise on 160, but I live in a very quiet rural area and I like to hear something besides an electric fence when connecting an antenna. Being 100 miles from the nearest powerful broadcasting station I unplugged the attenuator board and plugged a PA-19 preamp board into the attenuator sockets and it stayed there permanently. The main reason I bought Ten-Tec again is because it does not use PLL for tuning, and the external VFO can be used to monitor another frequency and the extreme sensitivity is sure useful. I have never had occasion to turn the RF gain to maximum except to show that it is not necessary to do so.

Congratulations on getting ON4UN to write for you. You sure have the low bands well covered. 73 Bob, VE7BS

Dear Bob,

I keep hearing good things about Ten-Tec transceiver. Another excellent feature is the QSK keying and that combination with their latest amplifier sure must be a pleasure for the serious CW operator. We will try to get our hands on the latest sample and do a review.

We are all pleased that ON4UN kindly agreed to write for all of us. RADIOSPORTING is the forum where top notch writers and material are appreciated by top notch readers and those who are interested in quality. We are looking forward to our third year. Thanks for notes Bob and keep writing! 73, Yuri

SV1PL:

This is a Greek version of the Mt. Athos story. We believe that our version is satisfactory enough and objective as we are sure that it is.

We (the active SV DXers) were informed from several sources that a big Italian DXpedition will start from 13 to 23rd of August 1986 in Mt. Athos. By asking the Greek authorities we confirmed that indeed an expedition was in preparation. But not a DXpedition, because the license for the Italians was for a "scientific research and observation of the sunspot cycle."

For your information there is not any reciprocity agreement regarding amateur radio between Italy and Greece and this license was issued by exception to a scientific group for the above mentioned reasons. Our surprise was great when we learned that the scientific group consisted of four very well known Italian DXers. We started to wonder if the current name of a QSO is "scientific observation" and if so what scientific observation is possible with and endless string of 59 reports from the Mt. Athos.

So, the Greek government to prevent a possible misunderstanding of the given scientific license, issued an additional explanatory document which was specifically clarified that no transmissions was allowed on the radio amateur bands. This additional explanatory document was handed to the Italian group on the 7th of August 1986.

Those are the facts in brief, for any interested DXer and if IØLJ believes otherwise, he must recheck his papers and what he did apply for. RAAG did not cancel anything or forced the cancellation of any not existent DXpedition license and that is the bitter truth for IØLJ, who never wants to understand.

SV1PL RAAG Adm. Council Member & QSL mgr.

SV1OL, SV1SQ RAAG HF Committee

P.S. I was on 13th of August inside Mt. Athos as official RAAG observer. I have taken photos there with IØDUD and IØGPY. I also have SX1MBA, Memorial Battleship Averoff special event station story and photos. 73, Angelo, SV1PL

What can we say?

To Italians: perhaps there could have been more sensitivity to domestic situation and cooperation with RAAG.

To Greeks: The "scientific research" of propagation can be done on ham bands and it is often used when there is a problem with authorities who don't want the hams, but can tolerate "scientific" hams. The results was: nobody worked a much needed country.

The recommendation: why don't we pull all together and try to make all those rare places more accessible, the rest of the world would be grateful.

I1POR:

Dear Yuri, thank you for the sample issue. I have a lot of ham magazines, but never find a fine article as the W2PV 4 el. Yagi design in them.

I would like to see a cumulative index of all the previous articles published in RADIOSPORTING. I like particularly articles on antennas and on equipment. I think that my TS-930S runs very hot during those long contest hours and also with 100 W out my SB220 is not pushed too hard. Do you have any tip how to increase the power and keep it cool? I am also considering buying the FT filters for SSB and CW, is it worth it?

73 and see you on the air!

Gianluigi, I1POR

Dear Gianluigi,

Thank you for kind comments and we are glad you enjoy the magazine.

The TS-930S has thermally controlled fan (two speed) operation on both heatsinks. You should see the fans to come on when they get warm. If they do not than you must have a problem in the circuits that control the fans. If they work, than TS-930S is safe, it will not damage itself. You might want to use external fan blowing at the back of the rig during the contest operation and this way help the built in fans. The power supply fan gets a little noisy after a while due to the unbalanced propeller on it (the set screw).

To get more power out of TS-930S you can adjust the trimmer within the ALC and power control circuit to obtain 150 W output. If the cooling system works properly there is no danger to the rig. Transistors in the final can take it. Just do not key the transmitter with full power (key down on CW) for too long.

The extra sharp filters from Fox Tango or International Radio are well worthwhile adding. The selectivity improvement is very much appreciated by the contesters. 73 and enjoy the back issues! de Yuri

WB9SES:

I need help to get my TS-180S with WARC modification to operate on 4.517 MHz for MARS operation. I have already tried fixed operation (with crystal) with no luck. Any suggestions? Dave, WB9SES

Sorry Dave, I am not familiar with TS-180S, perhaps someone will answer your request or I would suggest Bob Pohorence, N8RT, at International Radio, 747 South Macedo Blvd., Port St. Lucie, FL 33452. Good luck, 73! de VE3BMV

KC8PG:

Thanks for the best ever radio magazine! Best of luck and 73! Jim, KC8PG

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DXCA

DX CENTURY AWARD

GENERAL RULES

The DXCA program is sponsored by the International Radiosport Association and RADIOSPORTING magazine for all licensed radio amateurs and short wave listeners all over the world.

All contacts must be made from the same country. Maritime, aeronautical and land mobile stations may operate from anywhere in the world.

Only contacts made after January 1, 1986 are valid for the basic award.

Awards for club stations will be issued to the club and not to an individual operator.

All amateur bands for which an applicant holds a valid license may be used, including new WARC bands.

QSL cards for the awards must be in the possession of the applicant. The application for the award must be certified by two licensed amateurs with a statement that the list of contacts and QSL cards agree. Any altering or forging will result in disqualification. The IRSA Awards Committee has the right to request the QSL cards for verification.

The ARRL DXCC countries list criteria will be used in determining what constitutes a "country." A particular operation or DXpedition does not have to be recognized by the ARRL in order to count for DXCA (i.e. Burma). As long as there is a reasonable proof that the operation took place as claimed, it will be recognized. If it is found in the future that certain operations were not legitimate, the credit for that operation will be removed from all applications claiming the operation in question.

All officially allowed modes of communication may be used: CW, SSB, AM, FM, RTTY, Packet, SSTV and Mixed mode. Also separate categories will be recognized for satellite contacts, QRP, QRPP and Mobile stations. All contacts must be two way, using the same mode, except for the mixed mode. A valid contact must consist of a call sign and signal report exchange.

All claimed contacts must be made by the operators themselves, without the help of a third party, i.e. list or net operation. Non interference with commercial services on shared bands, fair play and good sportsmanship are required of all DXCA holders and applicants. In the event of specific objections relative to continued poor operating ethics, an individual may be disqualified from the DXCA by action of the DXCA Awards Committee.

The application must contain a station's callsign, name and address, type of award applied for and list of contacts. The list of contacts and any QSL cards in possession must include: callsign, signal report received, band, date, time GMT and two way mode.

Callsigns of all certificate holders will be published in RADIOSPORTING magazine and a DXCA Honor Roll will be published twice a year.

The first twenty winners of monoband and multi band awards will receive a free one year subscription to RADIOSPORTING Magazine.

The decisions of the IRSA Awards Committee are

SINGLE BAND DXCA

Single band DX Century Award is issued for working or hearing a minimum of 100 countries on one band. Endorsement stickers are issued in increments of 20 countries up to 240, increments of 10 up to 300 and increments of 5 above 300 countries.

Contacts made on all amateur bands (1.8, 3.5, 7, 10, 14, 18, 21, 24, 28 MHz and all VHF/UHF bands), as permitted by the license in the country of the applicant, are eligible for award. All contacts must be made on one band. No crossband contacts are allowed.

The basic award will be issued for a minimum of 100 countries confirmed on one band. A numbered endorsement stickers will be issued for each mode (CW, SSB, AM, FM, RTTY, Packet, SSTV and Mixed) and category (satellite contacts, QRP, QRPP and Mobile stations).

The holders of Single Band DXCA are allowed to use the abbreviation signifying the type of award and country total on their QSL cards.

Example: "1.8 DXCA" or "1.8CW DXCA 124/265" which means: Monoband 1.8 MHz, all CW mode, DXCA, 124 countries confirmed since Jan. 1, 1986/ number of countries worked.

MULTI BAND DXCA

6B DXCA, 7B DXCA, etc. awards will be issued for confirmations from a minimum of 100 countries on each of at least 6 bands. A separate awards will be issued for working 100 countries on 7, 8, or more bands.

Also a cumulative total will be kept for an overall countries count similar to the monoband awards. i.e. 7B DXCA (856/1265), which signifies that station has confirmed a minimum of 100 countries on each of 7 bands and the total count is 856 countries since Jan. 1, 1986 and 1265 countries on 7 bands worked. A numbered stickers will be issued for each mode and category.

Stations having monoband DXCA need not submit the list of contacts already credited for monoband awards. It is sufficient to mention the certificate type and number, and only an additional list of contacts has to be submitted.

Stickers for increments of 100 countries will be issued from 600 to 2000, increments of 50, from 2000 and up.

The Honor Roll - listing of top contenders and latest changes in standings will be published in RADIOSPORTING magazine twice a year.

The fee for each award is US $5 or 10 IRCs, and each endorsement sticker is $2 or 4 IRCs. Engraved Honor Roll plaques will cost $25.

A set of application forms and countries list for DXCA awards are available from IRSA for SAE and 3 IRCs.

All applications to be sent to IRSA - DXCA, Box 282, Pine Brook, NJ, 07058, USA

RADIOSPORTING

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